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FOREWORD

The *United States Armed Forces Medical Journal* is the medium for disseminating information of administrative and professional interest to all medical personnel of the Department of Defense. The Assistant Secretary of Defense (Health and Medical) and the Surgeons General of the several services invite all medical officers, dental officers, Medical Service Corps officers, Nurse Corps officers, and officers of the Veterinary Corps of the Armed Forces, and the medical consultants of the Army, Navy, and Air Force to submit manuscripts for publication in this *Journal.*

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Monthly Message

As I extend to all of you my greetings for our common work together, the words of the dying King Arthur to his faithful knight come to mind. In Tennyson's *Passing of Arthur,* Arthur says:

"The old order changeth, yielding place to new."

Although I succeed Dr. Casberg, that is the only change. We of the medical profession, within the armed services and without, are deeply grateful to Melvin Casberg for all he has done for us. He has established friendly, warm, and sincere rapport with all people and with all organizations with whom he has come in contact and, after all, organizations are merely people. He has impressed every one of us by his devotion to his task and his belief in truth and right. He has established a very firm foundation and wise policies and it is my hope that these may be furthered and developed to their fullest extent throughout the coming years. Although Dr. Casberg returns to private practice, he will always be available to us for consultation and I know that Secretary Wilson and his associates, the Advisory Council, and those of us in this office hope that he will actively participate as our mentor.

FRANK B. BERRY, M. D.
Assistant Secretary of Defense
(Health and Medical)

PHEOCHROMOCYTOMA

Successful Surgical Removal in Two Patients

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PHEOCHROMOCYTOMAS are tumors of unusual interest because the arterial hypertension caused by them can be completely alleviated. Pheochromocytomas are relatively rare tumors of chromaffin sympathetic nerve tissue, which are most often seen in the adrenal medulla or in one of the many areas where chromaffin tissue occurs, and which produce epinephrine and/or norepinephrine in abnormal quantities.

The symptoms associated with pheochromocytoma can be extremely varied and bizarre and may simulate many other diseases.[1-6] Crede and Kerr[6] observed that many patients with pheochromocytoma may have symptoms resembling those of acute anxiety attacks or other psychiatric disorders. The two patients reported in this article had both been given psychiatric diagnoses prior to the establishment of the exact nature of their disabilities. The usual symptoms produced by the tumor are the result of the secretion of an excess of the pressor substance, either continuously or intermittently. The action is metabolic as well as hemodynamic, according to Cahill and Aranow.[7] The hemodynamic action is due primarily to a vasoconstriction of the peripheral arterioles with a resulting elevation of the blood pressure. The chief metabolic changes are increased blood glucose, blood lactic acid, and basal metabolic rate.[7]

Pheochromocytomas have been known to pathologists since 1886, when Frankel reported the autopsy findings of bilateral adrenal tumors and cardiac hypertrophy in an 18-year-old girl, who had had attacks of palpitation, headaches, and vomiting for three years.[8] The clinical adrenosympathetic syndrome was first described by Labbe´ and associates[9] in 1922, and since then pheochromocytomas have been recognized with increasing frequency. In 1927, Mayo[10] reported the first successful surgical removal of such a tumor with cure of paroxysmal hypertension.

From U. S. Naval Hospital, Oakland, Calif. Comdr. Ross is now at U. S. Naval Hospital, Corona, Calif.

It is most important to perform indicated diagnostic procedures to rule out pheochromocytoma in all patients with hypertension, especially when the explanation of the symptoms and the hypertension is not satisfactory. Failure to diagnose the presence of a pheochromocytoma usually results in a progressive hypertension, progressive arterial disease, and eventual fatal outcome. The prognosis in patients afflicted with a pheochromocytoma is invariably fatal if the tumor is not removed.[11] The hypertensive crises in those with a history of paroxysms become more and more severe until death results from a violent crisis. The cardiovascular changes in a patient with chronic hypertension due to pheochromocytoma may not cause death as soon as those that occur in the paroxysmal type.[11] The importance of recognition of these tumors lies in the fact that successful extirpation ordinarily results in alleviation of the hypertension and its attendant vascular disease. Diagnosis of the presence of this tumor presents only one aspect of the problem.[12] Various diagnostic tests have been developed which greatly aid in establishing the diagnosis.[13-26] Accurate localization of the site of the tumor is necessary prior to surgery. Extraperitoneal pneumography, as described by Steinbach and associates,[27] proved to be a very satisfactory technic in the two patients herein reported, and the procedure produced no morbidity. Operative intervention and postoperative treatment presents many serious problems.[4,7,8,11,12,21,22,25,26,28,29] Successful surgical intervention usually results in a complete remission of symptoms and a cure of the hypertension. The operative mortality is still high. Snyder and Vick[30] reported a mortality rate of 22 percent in 58 patients operated on. More careful preoperative preparation, improved anesthesia and surgical technic, as well as the use of pressor and adrenolytic drugs during and following surgical intervention have produced a more favorable prognosis in these patients as well as a decreased mortality rate.

The two patients reported in this paper were treated at this hospital, and originally were described by Hood and Dickinson[31] as cases 1 and 3 in discussing the surgical approach indicated.

CASE REPORTS

Case 1. A 49-year-old man was admitted to this hospital on 27 December 1951 complaining of recurrent headaches dating back to 1943 and hemorrhage from the lungs of seven days' duration. He had enjoyed good health prior to 1943. At the onset the headaches were generalized and usually persisted from one to four hours, but on infrequent occasions lasted as long as 24 hours. The cephalgia would completely subside and he would be asymptomatic for three or four days. In 1944 he had a persistent headache of several months' duration. At that time he was under

treatment for an acute sinusitis, and therapy directed toward this disability afforded only minimal relief. Following this the headaches again became recurrent in nature. In June 1951 the cephalgia became much more severe and consisted of daily episodes from 30 to 90 minutes in duration. Subsequent to June 1951 the headaches usually occurred at about 1000 each day and were often brought on by sudden changes in body position. Marked generalized weakness, a feeling of prostration and a profuse perspiration were associated with the episodes of headache.

In 1943 and 1944, while in the armed services, he was studied in order to determine the cause of the cephalgia and it was found that the blood pressure was elevated. He was subsequently discharged from the service in 1945 on the basis of arterial hypertension and anxiety reaction. Subsequent to 1945 he had been under the care of physicians almost continuously because of the recurrent headaches, joint symptoms and the elevated blood pressure. He was told on numerous occasions that the blood pressure was within normal limits, whereas on other occasions it was found to be as high as 240/135. He complained of mild dyspnea on strenuous exertion, but with the exception of the hemoptysis of bright red and frothy blood, which had been present for 7 days prior to his admission to the hospital, he denied other cardiovascular or respiratory symptoms. He had been treated for the hemoptysis in another hospital and he stated that he was "unconscious" most of that time.

His 73-year-old mother had had hypertensive cardiovascular disease for many years.

The physical examination on admission revealed evidence of chronic illness and moderate pallor. The blood pressure was 142/92. Other physical examination findings were within normal limits.

An electrocardiogram taken on admission to the hospital showed T-wave inversion (fig. 1, before surgery). Blood glucose determinations were found to be normal, but during paroxysms of hypertension blood glucose was elevated as high as 296 mg. per 100 cc. A benzodioxane test during a paroxysm of hypertension, using 17 mg. of piperoxane hydrochloride (benodaine), produced a fall in blood pressure amounting to 110 mm. Hg systolic and 55 mm. Hg diastolic in 2 minutes. An oxygen insufflation in the retroperitoneal spaces demonstrated a 4- by 4.5-cm. mass in the region above the superior pole of the right kidney (fig. 2). The left kidney and suprarenal structures appeared normal on this study. The technic in this procedure was essentially as described by Steinbach and associates:[27] The patient was placed in the Sim's position. A number 20-gage spinal needle was inserted in the mid-

line between the anus and coccyx and directed with a finger in the rectum into the presacral space for a distance of about 5 centimeters. The position of the needle was checked by attempting aspiration and then by injecting a few cubic centimeters of air. If resistance to the injection of air was encountered, the needle was inserted a centimeter deeper and rechecked. Oxygen was insufflated by fluid displacement using an apparatus consisting of two Kelly flasks and appropriate tubing. The volume was accurately measured and the pressure easily controlled by this

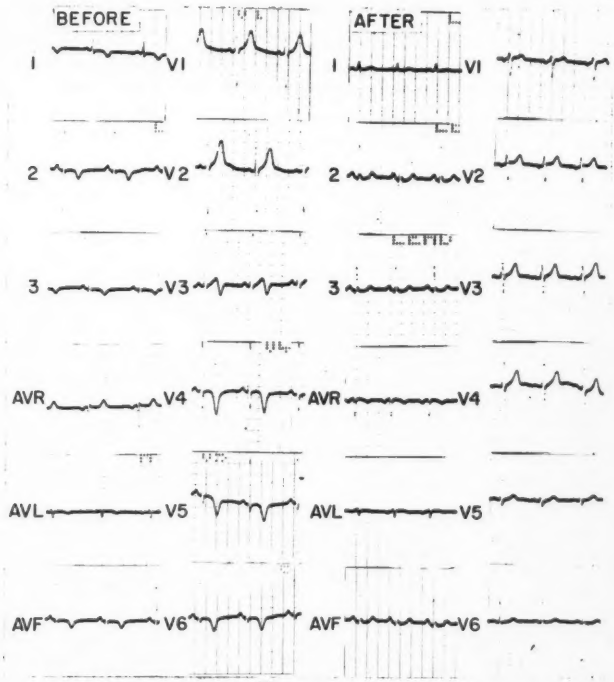

Figure 1 (case 1). Electrocardiograms taken before and after operation, showing abnormal T waves before and return to normal following operation.

technic. From 900 to 1,100 cc. were used. For detailed unilateral visualization the patient was placed in a position with the affected side up and the head of the bed elevated. One and one-half hours were allowed for diffusion; then test exposures were made at hourly intervals. When satisfactory diffusion had occurred, additional exposures were made. If not, the patient was repositioned for another hour. These included anteroposterior, right, and left oblique exposures. Other views have been of minimal value in our experience.

An upper gastrointestinal roentgenographic series with barium showed a delayed emptying of the stomach with otherwise negative findings. A radiographic examination of the spine demonstrated hypertrophic arthritic changes. A tuberculin skin test was positive in the first strength. Other indicated laboratory proce-

Figure 2 (case 1). Extraperitoneal pneumogram showing the tumor mass in the right suprarenal area.

dures and special examinations, including a funduscopic examination, a blood Kahn test, complete blood counts, erythrocyte sedimentation rates, numerous urinalyses, a Fishberg concentration test, numerous sputum examinations for tubercle bacilli by smear and culture, a roentgenogram of the chest, an electroen-

cephalogram, intravenous pyelograms, and skin tests for coccidioidomycosis and histoplasmosis were negative or within normal limits.

The patient's course in the hospital was characterized by recurrent episodes of severe frontal headaches, associated with profuse perspiration and generalized weakness. During these attacks his blood pressure was found to be markedly elevated to levels of over 300 mm. Hg systolic and 170 mm. Hg diastolic. The symptoms and paroxysms of hypertension usually persisted for from 30 to 90 minutes and often occurred at about 1000 each

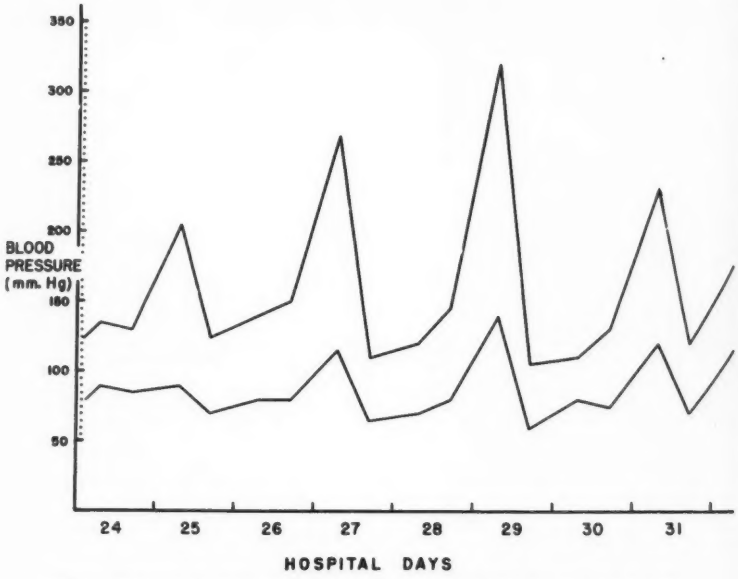

Figure 3 (case 1). Graph showing sample daily blood pressure levels.

day. The blood pressure between paroxysms was found to be from 110/70 to 140/80. Massage to the right renal area produced a paroxysm of hypertension with headache, perspiration, and weakness, whereas massage over the left renal area elicited no change in the blood pressure and no symptoms. There was marked variation in the blood pressure taken at specific hours each day (fig. 3).

On 19 February 1952 the patient was started on cortisone, 100 mg. given intramuscularly twice daily for two days preoperatively and two days postoperatively, then 50 mg. twice daily for three days, 25 mg. twice daily for three days, then 25 mg. daily for three days. On 21 February 1952 he was prepared for surgical

excision of the tumor, at which time his blood pressure was normal. Following induction anesthesia with thiopental sodium (pentothal) the blood pressure rose to 270/140. Benodaine given intravenously in a total dosage of 40 mg. produced only a slight, transient decrease in the blood pressure levels. Five milligrams of phentolamine (regitine) was administered intramuscularly, and shortly thereafter there was a gradual decrease in the blood pressure to preinduction levels. A thoracicoabdominal incision was

Figure 4 (case 1). Photomicrograph of tumor tissue. (× 645)

made over the ninth rib on the right. The pleural cavity was exposed and the lung was partially deflated and retracted away from the diaphragm, as described by Hood and Dickinson.[11] The diaphragm was incised above the dome of the liver and the peritoneal cavity was entered. The liver was retracted medially, exposing the space between the liver and the upper pole of the kidney. The adrenal gland was readily identified. The cortical substance was stretched over and around a 4-cm. spherical mass. The tumor was well encapsulated, soft, and reddish brown, with yellow-brown nodules scattered diffusely over the surface. The

lesion was gently dissected from its bed. At the time the tumor was manipulated there was a transient rise in the blood pressure. Shortly before the tumor was clamped off and excised, 1-norepinephrine (levophed) was administered intravenously, using 4 cc. in 1,000 cc. of normal saline solution.[23] At the time the tumor was excised the blood pressure dropped to 76/40. With 1-norepinephrine the blood pressure was maintained at a level of around 95/50. After surgery, 1-norepinephrine was continued intravenously at a slow rate for about 24 hours.

The patient's postoperative course was uneventful and his blood pressure stabilized at a level of 130/80. He had no recurrence of his preoperative symptoms and no recurrence of the paroxysmal hypertension. A histamine test was performed after surgery, using 0.05 mg. intravenously, and there was no elevation in the blood pressure. Serial electrocardiograms revealed that the T waves returned to within normal limits after surgical intervention (fig. 1). The patient was discharged to his home on 5 March 1952 completely asymptomatic. At the time of this writing his blood pressure is normal and he is enjoying good health.

The tumor weighed 17 grams. Histopathologic examination was diagnostic of benign pheochromocytoma (fig. 4). The tumor was analyzed by paper partition chromatography and a modification of von Euler's colorimetric method by Goldenberg.[32] It was found to contain norepinephrine in an amount of 7.62 mg. per gram of tumor tissue and epinephrine 1.72 mg. per gram of tumor tissue.

Case 2. A 45-year-old man was admitted to the hospital on 16 April 1952 because of nausea, vomiting, headache, and dizziness. He had had recurrent gastrointestinal symptoms since 1926 which usually consisted of pain in the abdomen, nausea, and vomiting, and were usually relieved by rest and by antacids. He was first admitted in 1945, but all findings of the upper gastrointestinal tract were negative at that time. In 1947, during a recurrence of his symptoms, he was admitted for suspected duodenal ulcer. His symptoms subsided in two months and he remained relatively well for seven months, but subsequently required several short periods of hospitalization because of recurrences. Beginning in 1949 he had severe, recurrent frontal and bitemporal headaches associated with weakness, pallor, nausea, and vomiting. These episodes tended to recur about once each month and would persist for from 30 minutes to two hours. From early 1950 until July 1951 he noted a progressive increase in the frequency of these symptoms. After July 1951 he had an episode each day, usually coming on at 1030 and lasting from 30 minutes to two hours. Body position and activity had no relation to his complaints. On numerous occasions during recurrences he noted blood streaks with the emesis, and black tarry stools. During a

previous period of hospitalization he was given an injection of histamine for a gastric analysis. This was followed by a violent reaction, characterized by headache, nausea, vomiting, extreme weakness, and syncope.

The physical examination at the time of his admission revealed an acutely ill, poorly nourished male. He appeared lethargic and there was moderate pallor. The blood pressure was 130/84 and the apical rate was 110 per minute. There was evidence of minimal cardiac enlargement to the left. Examination of the abdomen showed mild tenderness on deep palpation in the epigastric area. The lower pole of the right kidney could be palpated on deep

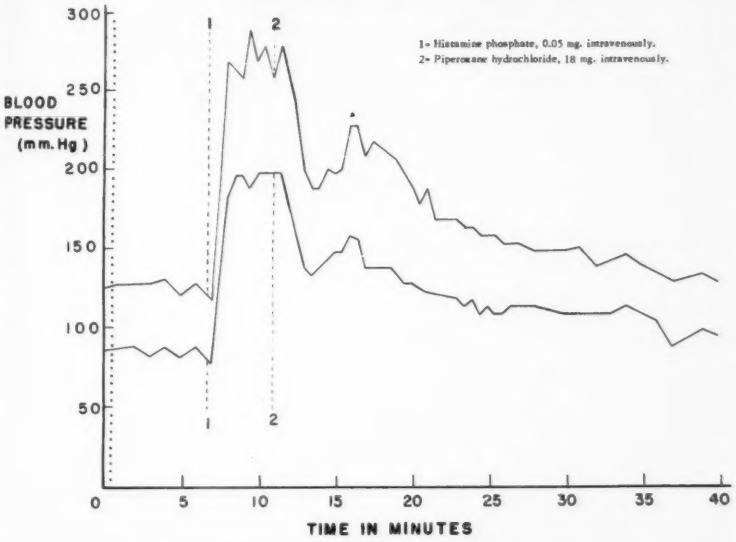

Figure 5 (case 2). Histamine and benzodioxane tests.

inspiration. The remainder of the physical examination was not contributory.

An electrocardiogram revealed definite T-wave abnormalities. There were marked T-wave changes as compared with a tracing taken in August 1951. A Fishberg concentration test showed a maximum specific gravity of 1.012. A urinalysis showed an albuminuria amounting to 300 mg. per 100 cc. Nonprotein nitrogen was 42 mg. per 100 cc. A histamine test was performed, using 0.025 mg. intravenously, with a resulting elevation of the blood pressure from a level of 130/80 to 290/200 (fig. 5). Six minutes after the injection of the histamine, 18 mg. of piperoxane hydrochloride were given intravenously. This resulted in a drop in the blood pressure from 280/200 to 190/130 in a period of three

minutes (fig. 5). Following the administration of histamine he developed a paroxysmal ventricular tachycardia, which persisted for five minutes, then subsided without specific therapy. Blood glucose determinations during paroxysms of hypertension were as high as 145 mg. per 100 cc. By injecting 1,100 cc. of oxygen an extraperitoneal pneumogram was made using the same technic

Figure 6 (case 2). Extraperitoneal pneumogram showing tumor mass in the right suprarenal area.

as in case 1. This study showed the presence of a tumor mass in the right suprarenal area (fig. 6). All other indicated laboratory procedures and special examinations, including a blood Kahn test, complete blood count, erythrocyte sedimentation rate, funduscopic examination, blood cholesterol determination, roentgenogram of the chest, upper gastrointestinal roentgenographic series, and intravenous pyelograms were negative or within normal limits.

On the date of the patient's admission to the hospital, headache, syncope, nausea, vomiting, weakness, and pallor recurred and his blood pressure was found to be 270/170 and the apical rate, 180 per minute. In the course of the next several days he developed numerous episodes of paroxysmal hypertension during which electrocardiograms showed a change in rhythm from a normal sinus mechanism to a nodal rhythm, with runs of auriculoventricular dissociation.

The patient was scheduled for surgical removal of the tumor on 8 May 1952. On 3 May 1952 quinidine therapy was started for the

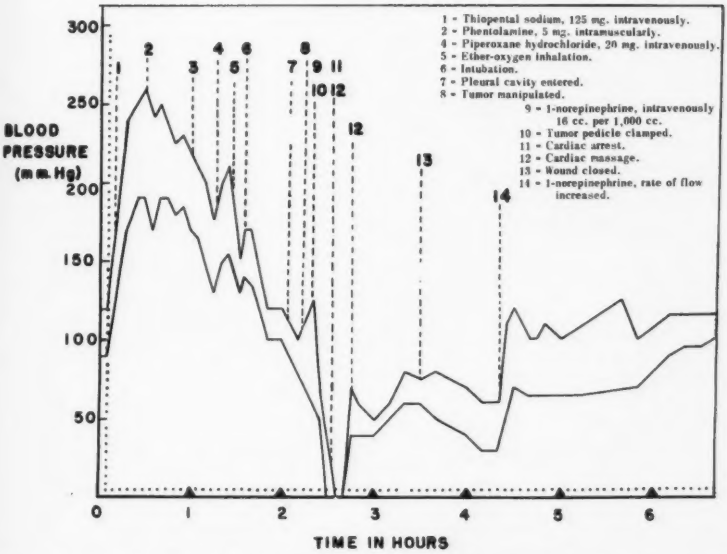

Figure 7 (case 2). Graph showing operative and postoperative blood pressure levels with administration of various drugs.

prevention and control of his cardiac arrhythmias. On 6 May 1952 intramuscular cortisone was begun in a dosage of 100 mg. twice daily for two days preoperatively and two days postoperatively, then 50 mg. twice daily for two days, 25 mg. twice daily for two days, and 25 mg. daily for two days. He was given 5 mg. of phentolamine intramuscularly before being taken to the operating room. At that time his blood pressure varied from 130/90 to 170/100, but after arrival in the operating room it rose to 250/190. Twenty minutes later it was 130/90. Induction anesthesia with thiopental sodium was begun and the blood pressure went to 240/180. An additional 5 mg. of phentolamine were given intramuscularly with no appreciable change in the blood pressure (fig. 7). Twenty milligrams of piperoxane hydrochloride given intravenously reduced

the blood pressure only slightly (fig. 7), and it gradually returned to relatively normal levels after 75 minutes. At that time a thoracicoabdominal incision was made, using essentially the same technic as in case 1. The tumor was readily palpable when the diaphragm was opened and resection was accomplished. The tumor measured 6 by 4.5 by 4.5 cm. Upon removing it, the blood pressure dropped to unobtainable levels. The electrocardiogram showed a cardiac arrest. The pericardium was opened and the

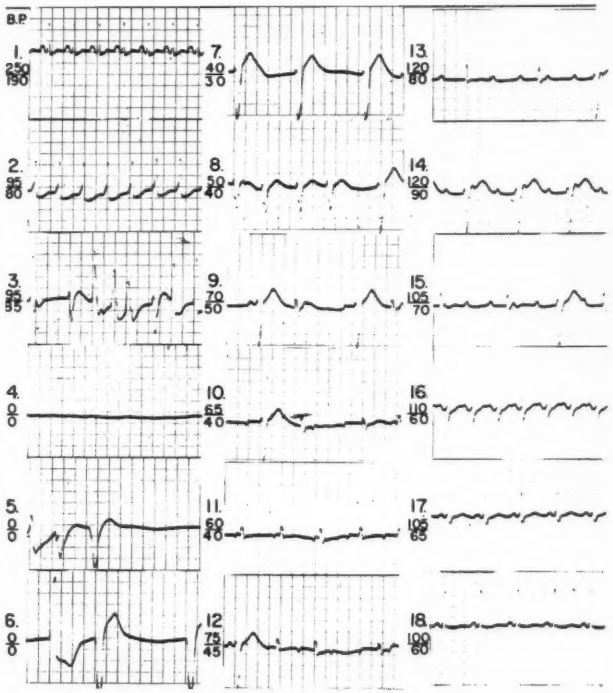

Figure 8 (case 2). Electrocardiograms (lead II) during operation, showing some of the arrhythmias which developed.

heart action was found to be arrested. Cardiac massage was promptly instituted and 0.5 cc. of 1:1,000 epinephrine was injected into the heart. After five minutes a second intracardiac injection of epinephrine was made, following which the heart began to beat at a rate of 40 to 50 per minute. Sixteen minutes lapsed before the blood pressure rose significantly. Intravenous administration of l-norepinephrine in the concentration of 16 cc. per 1,000 cc. of fluids (fig. 7) was started at a rapid rate immediately before the pedicle was clamped and was continued for about 48 hours postoperatively for maintenance of blood pressure. Post-

operatively he was given epinephrine in oil intramuscularly every two hours. The blood pressure gradually became stable at normal levels.

Electrocardiographic tracings taken continuously during surgery revealed the cardiac arrest described above and, in addition, showed numerous types of cardiac arrhythmias, including sinus tachycardia, nodal rhythm, auriculoventricular dissociation, paroxysmal ventricular tachycardia, numerous ectopic beats (multifocal ventricular, nodal, and auricular in origin), and incomplete and complete auriculoventricular block (fig. 8).

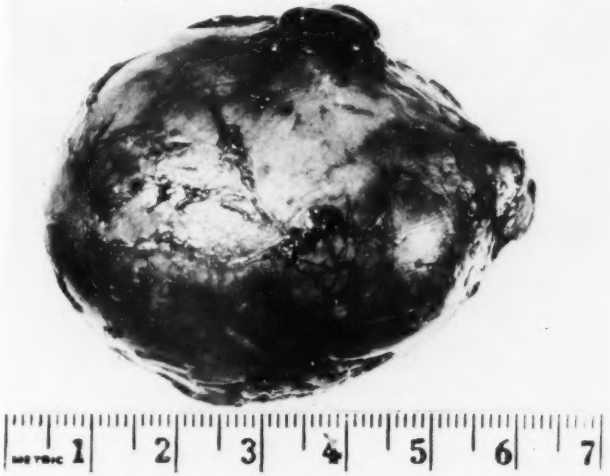

Figure 9 (case 2). Photograph of tumor.

After the second postoperative day the patient's course was uneventful. There was no evidence of damage to the central nervous system from the cardiac arrest and hypotension. His blood pressure remained at normal levels and he had no recurrence of symptoms. Serial postoperative electrocardiograms showed a return to normal of the previously abnormal T waves and a histamine test, using 0.05 mg. intravenously, was negative.

The tumor weighed 65 grams and had essentially the same gross characteristics as that described in case 1 (fig. 9). The histopathologic picture was that of a benign pheochromocytoma (fig. 10). The tumor was analyzed by paper partition chromatography and a modification of von Euler's colorimetric method by Goldenberg[32] and was found to contain norepinephrine in an amount of 7.3 mg. per gram of tumor tissue and epinephrine 3.2 mg. per gram of tumor tissue.

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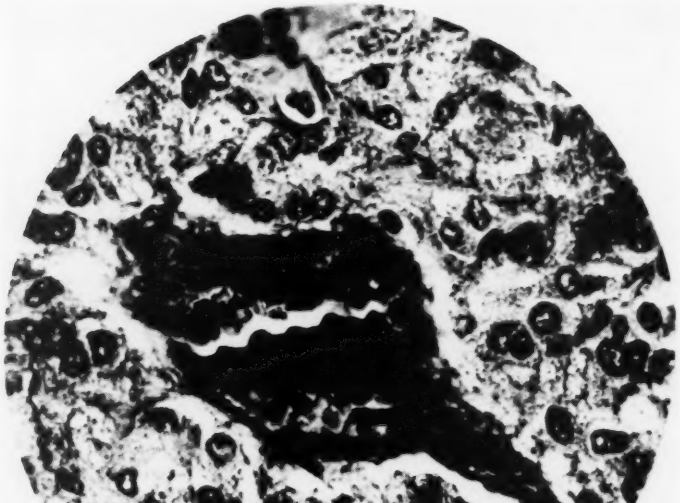

Figure 10 (case 2). Photomicrograph of tumor tissue. (× 645)

A 24-hour urine specimen, collected before the tumor was surgically removed, was found to contain a mixture of epinephrine and norepinephrine equivalent to 1100 μg. of norepinephrine.

DISCUSSION

The symptomatology associated with pheochromocytoma may be extremely varied and bizarre, and the clinical syndrome may simulate many other disease processes. The usual symptoms have been well documented in the literature. The disease does not always appear in a paroxysmal form, and the blood pressure may be sustained for several weeks. When paroxysms occur they vary in duration, frequency, and intensity, persisting for a few minutes to many hours. The episodes usually increase in frequency as well as severity. Between attacks the patient is usually healthy, but the prognosis in patients with a pheochromocytoma is fatal if the tumor is not removed.

Examination of the patient during an attack is very helpful in establishing the diagnosis. The histamine test described by Roth

and Kvale[16] is often used. The drug is administered rapidly intravenously in an amount of 0.025 to 0.05 mg. In the normal person it usually produces little effect, but in the presence of a pheochromocytoma it may cause a severe paroxysm of hypertension. In case 2 herein reported the reaction to the test was positive before surgical removal of the tumor and became negative after the pheochromocytoma was removed. Following the preoperative administration of the drug in case 2 there developed a paroxysmal ventricular tachycardia, which subsided without specific therapy. In case 1 the reaction to the histamine test was negative following successful surgical removal of the tumor but the test was not conducted before operation. Another test used for the establishment of the diagnosis is the benzodioxane test.[16] This procedure is not without some danger and is being replaced by the regitine test in many clinics. During a paroxysm of hypertension or in a patient with sustained hypertension, a calculated dosage of piperoxane hydrochloride is injected intravenously. In a person with a pheochromocytoma there is a definite drop in the systolic as well as diastolic blood pressure. In the two cases herein reported, piperoxane hydrochloride was used and the reaction to the test was positive in each case prior to operation. Massage over the right renal area produced symptoms and a paroxysm of hypertension in one of the patients reported in this article. The use of extraperitoneal pneumography as described by Steinbach and associates is an extremely valuable aid in localizing the tumor. This retroperitoneal oxygen insufflation technic is an important step forward in that tumors are readily demonstrated in the renal and adrenal areas. This procedure is accomplished painlessly, safely, and without morbidity to the patient. The results are consistently good. The technic is far superior to the older method of perirenal insufflation which was associated with a high morbidity and mortality rate. The resulting roentgenographic studies by this older technic were often of inferior quality and lacking in diagnostic details. In the two patients herein presented the tumors were well localized and outlined by the extraperitoneal oxygen pneumographic studies (figs. 2 and 6).

The treatment of pheochromocytoma is surgical excision. Operation is not without danger and the mortality rate for the procedure is still high. Paroxysmal cardiac arrhythmias, including ventricular tachycardia and fibrillation, are prone to develop in the presence of excess epinephrine. The development of paroxysmal ventricular tachycardia was well demonstrated in case 2 and is undoubtedly a common cause of death at the time of operation. Because there is often a rise in blood pressure when the tumor is being manipulated, it should be handled gently. Several drugs are available for use in combating this marked elevation of blood pressure, including the benzodioxane drugs, phentolamine, di-

benamine, and others. The results obtained from the use of these drugs have been variable. There may be a dramatic fall in the blood pressure at the time of ligating the pedicle of the tumor. For this reason 1-norepinephrine, whole blood, and other indicated measures should be available for immediate use. In the two patients presented, 1-norepinephrine was started before the tumor pedicle was clamped. In case 1 the blood pressure was well controlled during surgical intervention and for the ensuing 24 hours by using 4 cc. of 1-norepinephrine in a 1,000 cc. of normal saline administered at a slow rate. In case 2 it was necessary to use 16 cc. of 1-norepinephrine in 500 cc. of whole blood or in 1,000 cc. of fluids and the rate of flow had to be increased to prevent hypotensive levels. An advantage of 1-norepinephrine over epinephrine for maintaining the blood pressure levels in patients with pheochromocytomas is that 1-norepinephrine increases the peripheral resistance and does not increase the cardiac output or produce cardiac arrhythmias. Cortisone was administered preoperatively as well as postoperatively to the two patients reported. There was no evidence of adrenal cortical insufficiency in either patient.

The surgical technic used in the two patients reported was the thoracicoabdominal approach as described by Hood and Dickinson.[31] This method proved most satisfactory and the tumors were readily accessible through this incision.

Close teamwork by the surgeon, the anesthetist, and the cardiologist is necessary in the management of a patient with pheochromocytoma. Adequate preoperative planning by all concerned is extremely desirous in this type of case so that the appropriate anesthetic agents will be employed, the desired preoperative medication administered, and an ample supply of all necessary drugs will be available in the operating room, and the postoperative therapy outlined.

SUMMARY

Following surgical removal of the tumors in two patients with pheochromocytoma with paroxysmal hypertension the blood pressure remained completely normal and they both have remained asymptomatic. Postoperative histamine tests were negative in both of these patients. Postoperative electrocardiograms were normal, whereas prior to surgical intervention tracings in both patients were grossly abnormal. In the immediate postoperative period 1-norepinephrine for maintaining stable blood pressure levels was used with good results in both patients. Retroperitoneal oxygen insufflation studies accurately localized the tumor masses in both patients and was a painless and completely safe procedure.

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Postoperative Small Bowel Obstruction

The distinction between organic obstruction and paralytic ileus in the distended, vomiting postoperative patient is of the greatest importance. The added insult of reopening the abdomen of a patient who is suffering only from adynamic ileus may so aggravate his condition as to make his intestinal atony irreversible and ultimately fatal. On the other hand, failure to operate upon the patient with organic obstruction to relieve that obstruction may be equally fatal. The roentgenographic examination is not an infallible guide. With the aid of the fluoroscope if need be, it is almost always possible, even in the most severely distended patient, to get a long intestinal decompressing tube through the pylorus and into the upper small bowel within a few hours. If, after 24 hours of continuous intestinal suction, such a patient is still losing a great volume more fluid by his intestinal suction than he is able to take in by mouth, it must be assumed that his obstruction is organic and persistent and will only be relieved by operative interference. In contrast it will be found that 24 hours of effective intestinal suction in the patient with simple adynamic ileus will not only correct his distention, but will so restore the peristaltic activity of the small bowel that one can no longer recover from the tube a volume of fluid equal to that which the patient is drinking. The importance of the nursing care cannot be overestimated.

—JESSIE GRAY
in *Surgery Gynecology and Obstetrics*, p. 119, Jan. 1954

Dr. Frank B. Berry Sworn in as Assistant Secretary of Defense

Dr. Frank B. Berry, right, former professor of clinical surgery at Columbia University College of Physicians and Surgeons, is shown taking the oath of office as Assistant Secretary of Defense for Health and Medicine on 28 January 1954 in a ceremony at the Pentagon office of Secretary of Defense Charles E. Wilson, center. The oath was administered by Mr. John E. Moore, Director of Personnel Division for the Assistant Secretary of Defense for Manpower and Personnel.

Dr. Berry was appointed to this high position following the resignation of Dr. Melvin A. Casberg who has returned to private practice. He is the second physician to become the Assistant Secretary of Defense.

DIETHYLSTILBESTROL IN MUMPS ORCHITIS

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THE status of diethylstilbestrol in the prophylaxis and treatment of mumps orchitis is not clearly defined, and it is desirable to do so. Diethylstilbestrol is an inexpensive, relatively innocuous drug,[1] readily available to practitioners. On the other hand, convalescent mumps serum gamma globulin is expensive, difficult to administer in the dosage of 20 cc. intramuscularly, and the supply is limited. Possibly for these reasons there has been no recent confirmation of the original good report in the prophylaxis of mumps orchitis.[2] Bed rest has long been known to be of no value in preventing this complication.[3] In the active treatment of orchitis, surgical decompression has been recommended.[4] This requires certain surgical skill, equipment, postoperative care and hospitalization, and does not offer any more to the patient than diethylstilbestrol therapy.[5]

The rationale for the use of this synthetic estrogen seems well-founded. Children are not subject to orchitis, but the incidence of this complication increases to about age 17 years and declines after 30 as does mumps itself. Estrogens produce atrophy of germinal epithelium and Leydig cells by inhibiting the gonadotrophin production of the pituitary.[6] These changes have been followed experimentally in rats,[7,8] and have been applied clinically in the suppression of testicular function in prostatic cancer. How rapidly a satisfactory degree of suppression can be obtained is the crux of the problem. A lag of from six to 24 hours is to be expected before therapy is started. If 48 hours' treatment depresses function sufficiently, then statistical studies should show a reduction in the incidence of orchitis in the prophylactically treated group because the greater number occur from the third to the fifth day. If it does not, the severity of the orchitis might still be less in the partially suppressed testicle.

During our duty on the contagion ward of this hospital, we were uncertain as to the advisability of using diethylstilbestrol. When several patients developed orchitis while receiving this drug, we

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considered it worthless and discontinued it. The incidence of orchitis appeared to increase, and at one time three out of five patients on the ward had this complication. Diethylstilbestrol was reintroduced at a higher dose (5 mg. b. i. d.), and there was a sharp drop in the incidence of orchitis developing after admission.

PROPHYLAXIS

We have reviewed all available charts of patients with the unequivocal diagnosis of mumps, who were admitted from May 1950 to June 1953. Of 110 patients, 17 to 47 years of age, 13 were admitted with orchitis. Table 1 shows that this is the approximate incidence of early orchitis found by others. The 13 patients were not included in the further consideration of the value of prophylactic diethylstilbestrol. There remained 97 patients who were admitted with mumps, but without orchitis; of these, 63 were given prophylactic diethylstilbestrol in doses varying from 0.5 to 20 mg. daily (average, 8.3 mg.), for from two to 15 days (average, 7.1 days). Nine of these developed orchitis (table 2). Of the 34 patients on symptomatic treatment alone, 11 developed orchitis (table 3). Were there more cases, this would be a statistically significant percentage; moreover, if the 12 percent that developed orchitis prior to admission (table 1) were added to the 32 percent in the control group it would give a total incidence of 44 percent. From table 4 it can be seen that this is an unusually high incidence for a service hospital where mild, uncomplicated cases are admitted as well as severe ones. The same reasoning is applied in table 5 in comparing the incidence of previously reported orchitis while on diethylstilbestrol prophylaxis with the general incidence of 22.5 percent.

TABLE 1. *Incidence of orchitis on admission of patients with mumps*

Author	Number of patients	Patients having orchitis on admission	
		Number	Percent
Savran[9]	262	29	11
Gellis et al.[2]	502	35	7
Hall & Killeen	110	13	12
Total	874	77	8.8

TABLE 2. *Patients developing orchitis while on diethylstilbestrol*

Age of patients (years)	22	34	32	30	25	29	21	37	23
Involvement of mumps	Bilateral	Unilateral	Bilateral	Bilateral	Bilateral	Right submaxillary gland	Bilateral	Bilateral	Bilateral
Height of temperature (° F.)	105	103	102	104	104.8	102.6	103	103	102
Dosage begun on admission	1 mg. t. i. d.	1 mg. t. i. d.	0.5 mg. daily	5 mg. q. i. d. 4 days	5 mg. t. i. d.	5 mg. b. i. d.	5 mg. daily	5 mg. b. i. d.	2 mg. b. i. d.
Hospital day of second temperature rise	6	3	8	4	3	5	2	3	5
Hospital day of first testicular pain	6	5	10	5	4	1	Before admission	4	6
Hospital day of swelling and tenderness	7	5 (Bilateral)	10	5	5	6	3	4	6

TABLE 2. *Patients developing orchitis while on diethylstilbestrol*—Continued

Age of patients (years)	22	34	32	30	25	29	21	37	23
Diethylstilbestrol dosage after onset of orchitis	1 mg. t. i. d. at onset	none	0.5 mg. daily	none	5 mg. t. i. d. (incised)	5 mg. b. i. d.	5 mg. b. i. d.	5 mg. b. i. d.	2 mg. b. i. d.
Duration of fever after onset of orchitis (days)	3	5	2	4	5	2	2	3	3
Duration of swelling after orchitis (days)	?	8	?	14	8	7	8	8	7
Hospital stay after orchitis (days)	33	22	7	39	36	46	14	20	10
Other complications	none	none	none	Pulmonary embolus	none	Jaundice	none	none	none

If, as postulated, suppression of the testicles (via inhibition of gonadotrophin) takes place progressively over the period of time that diethylstilbestrol is administered, then there should be a significant decrease in the number of cases of orchitis with onset on the later hospital days. Table 6 shows no such incidence as compared with the control series in this small group of cases.

TABLE 3. *Results of prophylactic use of diethylstilbestrol*

	Number of patients	Patients who developed orchitis	
		Number	Percent
Diethylstilbestrol prophylaxis	63	9	14.3
Controls	34	11	32.4

The statistics presented to date neither prove nor negate the value of this drug. Without such a firm basis, we are often forced to rely on experimental and theoretical evidence and on clinical judgement. It is the clinical opinion of those who have presented data on this subject[9-13] that the drug is of value. Norton believed it did not decrease the incidence but only the severity of subsequent orchitis. It was our clinical impression that orchitis which developed during treatment with diethylstilbestrol appeared to be distinctly milder, while cases developing among the untreated group often produced severe prostration, anorexia, nausea, and vomiting, and not infrequently required intravenous administration of fluids.

As Candel[5] points out the duration of fever is variable in orchitis, and in about one half of the cases terminates by crisis. These factors make it difficult to evaluate therapy in a small series, particularly in retrospect, where criteria for evaluation were not set and consequently not recorded. The average duration of fever was 4.6 days in our 19 cases treated with diethylstilbestrol without previous prophylaxis, and the average duration of illness, 14.8 days. In five patients who received no treatment, the average duration of fever was 4.8 days and of illness, 13.8 days. For patients without treatment, Candel had an average duration of fever of 4.1 days, Eagles[14] of 3.7 days, and Norton[11] of 5.2 days.

DIETHYLSTILBESTROL TOXICITY

Although vomiting is the most common untoward reaction to diethylstilbestrol, the drug was in no instance discontinued for this reason when used prophylactically. In several patients in whom orchitis and fever had already developed prior to its institution, it was necessary to stop its use therapeutically. The

TABLE 4. *Incidence of orchitis in patients with mumps not given diethylstilbestrol**

Author	Number of patients	Patients developing orchitis		Approximate date	Source of cases
		Number	Percent		
Hammersley[26]	80	17	21	1821-1822	N. Y. State Prison
Radin[3]	4,397	611	14	1917-1918	Army
Dermon and Le Hew[27]	126	44	35	1941-1943	Army
McGuinness and Gall[25]	1,331	494	36	1942-1943	Army
Eagles[14]	2,500	628	25	1942-1945	Army
Gellis et al.[2]	502	161	32	1944	Army
Candel et al.[28]	142	37	26	1944-1945	Navy
Candel[5]	224	68	30	1945	Navy
Savran[9]	168	43	26	1946	Army
Worden[24]	250	41	16	1941-1942	Civilian
Norton[11]	78	48	62	1946-1948	Civilian
Hoyne et al.[10]	39	19	48	1948	Civilian
Total	9,837	2,211	22.5		

*Includes control group, only, of those investigators using diethylstilbestrol. Service studies include adults 17 and over. Civilian studies include children down to ages 13 and 10.

TABLE 5. *Incidence of orchitis while on diethylstilbestrol prophylaxis**

Author	Dose (mg.)	Number of patients	Patients developing orchitis		Incidence with 8.8 percent admission orchitis added (percent)
			Number	Percent	
Norton[11]	15	45	7	15.6	24.4
Hoyne et al.[10]	1 to 2	44	4	9.1	17.9
Savran[9]	3 to 4	80	9	11.1	19.9
Butti[12]	2	7	0	0	8.8
Hall and Killeen	0.5 to 20	63	9	14.3	23.1
Total		239	29	12.1	20.9

*All cases treated with diethylstilbestrol, regardless of dose or duration, are included.

vomiting that developed may have been due to the orchitis alone; in fact, emesis is not infrequent when the patient attempts to eat during the febrile period of severe orchitis.

TABLE 6. *Number of patients developing orchitis according to hospital day*

Hospital day	Prophylactic diethylstilbestrol	Control
1	0	0
2	1	4
3	2	3
4	1	2
5	2	1
6	1	0
7	0	0
8	1	1
Total	9	11

Most of the severe reactions to diethylstilbestrol have suggested a sensitivity to the drug. Exfoliative dermatitis,[15] angioneurotic edema,[16] herpetic eruption,[17] rashes,[17] and hepatocellular jaundice[18] have been reported. These reactions have been remarkably few considering the wide use of the drug. We encountered one case of what we believe to be hepatocellular jaundice due to diethylstilbestrol, which because of its rarity is briefly reported here.

CASE REPORT

A 29-year-old man was admitted 30 April 1952 for a tender swelling of the right submaxillary gland of about 12 hours' duration. Generalized aching of the legs had developed two days prior to admission, and the following day there had been an aching in the right thigh and groin. The patient gave no history of previous mumps or recent exposure. In the past he had manifested allergy to penicillin. Since 1944, he had had abdominal cramps and belching after meals and following nervous tension. A cholecystectomy was done in 1948 without relief of symptoms. Three subsequent upper gastrointestinal roentgenograms were normal.

On admission the patient was afebrile and manifested only the tender swollen right submaxillary gland, but was beginning to notice slight pain in the right testicle. On 5 May he developed an acute right orchitis with tenderness, redness, swelling, and fever

to 102.6° F., which subsided by lysis in two days. Visible jaundice, dark urine, and liver tenderness without enlargement were noted on 9 May. Liver biopsy was not done. The liver function studies are shown in table 7. Five milligrams of diethylstilbestrol, twice a day, had been started on his admission to this hospital. The testicle returned to normal by 12 May, and the drug was discontinued.

A glucose tolerance curve on 22 May, showed a fasting level of 131, a rise to 195 in 30 minutes, and a slow fall to 150 in two hours. During his 13 days on diethylstilbestrol, the patient was anorectic, nauseated, and vomited intermittently. Several liters of dextrose were administered. Because of the orchitis and long gastrointestinal history, these symptoms were difficult to evaluate. He vomited on the fifth and sixth day after diethylstilbestrol was stopped. Improvement in well-being began a few days earlier.

The only other drugs given prior to the onset of jaundice were three 30-mg. and three 60-mg. doses of codeine, and seven 0.6-gram doses of aspirin over the three-day period of febrile orchitis.

Negative studies were as follows: three complete blood counts, two urinalyses, Kahn, Davidson, four serum amylase, serum lipase, and an upper gastrointestinal roentgenographic series. In an attempted cholecystogram the dye was not visualized. Erythrocyte sedimentation rates were repeatedly elevated through 19 May. The urine was positive for bile on that date, but became negative before discharge. The patient made an uneventful recovery and was returned to full duty on 20 June 1952.

REACTIONS FROM DRUG

A report of a similar case[18] concerned a 44-year-old woman who took 12 mg. of diethylstilbestrol for 14 days. Her symptoms developed on the sixth day of therapy, and liver function studies confirmed the presence of hepatic damage. A skin test was positive to diethylstilbestrol. She made an uneventful recovery with clearing of the jaundice.

Interestingly, jaundice secondary to testosterone therapy has been reported[19] but neither an allergic nor hepatotoxic action seemed evident. The rarity of its occurrence has been noted.[20] Reports of carcinoma of the male breast following prolonged diethylstilbestrol therapy for prostatic cancer have appeared,[21,22] but no fear of such a complication should be entertained in the short courses recommended here. Edema was not noted in any of our patients. It is known, however, that estrogens (and androgens) decrease sodium excretion with resulting sodium and water retention, and cardiac patients should be observed for this com-

TABLE 7. *Résumé of liver function tests*

	Date				
	May 9	May 18	May 26	June 2	June 9
Serum bilirubin (mg. per 100 cc.)	2.8	1.2	0.72	0.44	0.36
Direct	2.7	1.1	0.51	0.22	0.27
Indirect	0.1	0.1	0.21	0.22	0.09
Thymol turbidity (MacLagan units)	4	4	5	9	7
Cephalin-cholesterol flocculation					
(24 hour)	Neg.		±	1+	Neg.
(48 hour)	Neg.		1+	2+	1+
Alkaline phosphatase (Bodansky units)		5.0			

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plication. One patient, who had received 20 mg. of diethylstilbestrol daily, complained of tenderness of the breasts, one week after his last dose. This persisted three weeks. Pigmentation of the nipple and areola has been reported in intensive therapy with estrogen in cancer of the breast in men.[23] None was noted in the short-term therapy in this series. Temporary loss of libido occurs in a small percentage.

COMPLICATIONS OF MUMPS

Orchitis is by far the most frequent complication of mumps. It is usually preceded for 12 to 36 hours by fever (table 2), although infrequently it develops without fever. This occurs when the onset of orchitis is late in the disease. Pain in the testicles often precedes the swelling, but may occur concomitantly. It is not infrequently present in those who never develop orchitis.

Sterility is difficult to evaluate. Both testicles were involved in two of 34 patients who developed orchitis. This approximates the incidence reported by others.[14,24,25] About 50 percent develop atrophy, but even the partially atrophic testicle may contain normal sperm. Therefore, it is not primarily because of sterility that a preventive is desired, and the practitioner should reassure his uneasy patient that sterility due to mumps is infrequent.[5]

Pancreatitis was not a significant entity in this series. Backache occurred frequently, but was usually relieved by a bedboard and heat.

Encephalitis following mumps was not observed in any patients during the three years covered by this survey in the age group studied. Two cases, however, were noted in children ages 3½ and 7 years. They recovered on symptomatic therapy alone.

Several cases of *salivary gland involvement, other than the parotid,* were excluded because of question of diagnosis.

The results of complement fixation tests and skin tests for mumps were not recorded.

SUMMARY

Nine of 63 patients with mumps given diethylstilbestrol prophylactically and 11 of 34 in the control group developed orchitis. While these figures suggest that diethylstilbestrol is of value as a prophylaxis, a more adequately controlled study is indicated. Clinically, the orchitis that developed during diethylstilbestrol prophylaxis appeared to be a milder form. The value of diethylstilbestrol therapy in mumps orchitis already developed was not supported by this study. The occurrence of serious reactions to diethylstilbestrol is rare, but one patient developed hepatocellular jaundice due to this drug.

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Admiral Pugh Honored by Japanese Medical Society

Rear Admiral Lamont Pugh, Surgeon General of the U. S. Navy, is shown receiving a certificate of honorary membership in the Yokosuka and Miura Medical Association from Dr. Saburo Harada, president of the society, on his recent visit to the U. S. Naval Hospital, Yokosuka, Japan, during a 15-day inspection tour of naval medical facilities in the Far East.

EPIDEMIC OF BACILLARY DYSENTERY ABOARD A NAVY VESSEL

WILLIAM H. COPE, *Lieutenant, MC, USN*

A RECENT outbreak of shigellosis aboard one of the vessels of the Atlantic Fleet re-emphasizes the great potential this disease possesses for quickly inactivating large segments of a military population.

The annals of medical science contain many references to the Navy's costly and distressing experiences with shigellosis. In 1927[1] and again in 1930[2] there were extensive outbreaks among ships' crews in the Guantanamo Bay area. During World War II, when there was a major concentration of our ships in the Pacific, outbreaks of shigellosis became more frequent, finally assuming major importance by involving approximately 6,000 men on ships in San Pedro Bay at the head of Leyte Gulf, Philippine Islands.[3] Shigella was for the moment a more sinister and effective foe than the Japanese Imperial Fleet. Thus introduced to the Pacific Fleet at San Pedro Bay, shigella probably was responsible for the outbreak among the personnel of ships anchored in Tokyo Bay during the latter part of 1945 and among ships en route to Bikini in May 1946.

REPORT OF AN EPIDEMIC

During the summer 1953, Ship "X" arrived in the harbor of a South American port (Port "A"), docked alongside the commercial piers, and immediately tapped into the local city water supply. Initial tests of the water showed that it contained no chlorine. It therefore was chlorinated in the ship's tanks to one part per million. The ship remained in this harbor for eight days. During this period all personnel of the ship were given liberty ashore, and a variety of fresh provisions were purchased for the ship in the local market. All fresh stores (such as lettuce and tomatoes) were soaked in solutions of sodium hypochlorite and potassium permanganate, then rinsed well before serving.

From U. S. Navy Preventive Medicine Unit No. 2, U. S. Naval Base, Norfolk, Va.

On the sixth day in port, a marine reported to sick bay with a temperature of 104° F., slight nausea, bloody diarrhea, and marked malaise. Although the causative organism was unknown at the time, therapy was started with terramycin. During the next two days, seven other patients were seen and treated symptomatically. Their diarrhea was much less severe clinically and was thought to have been caused by the internal trauma of excessive food and drink ashore.

After leaving port, the ship was under way for 16 days to a second South American port (Port "B"). During this period the daily incidence of new cases of diarrhea reached a peak of 16 on the seventh day, with an average of eight new cases daily. All of the patients observed during this period who had high fever (over 102° F.) and bloody diarrhea were admitted to sick bay and treated with 6 grams of terramycin given over a three-day period.

Several days after leaving Port "A" it was observed that most of the ambulatory patients were not responding satisfactorily to symptomatic therapy (tincture of belladonna, and bismuth and paregoric), and an effort was made, in spite of the limited laboratory facilities aboard, to isolate and identify the agent or agents responsible. Rectal cultures from several of the ambulatory and admitted patients were carried from Endo's culture medium to lactose, sucrose, maltose, and dextrose sugars. Acid was produced only in the dextrose, and a hanging drop of the cultures revealed no motility. In view of the symptomatology of the disease and the laboratory findings, incomplete as they were, it was presumed that the causative organism was shigella, type unknown. From that point on, because of the limited supply of aureomycin and terramycin on board, all ambulatory patients were treated with 3 grams of sulfaguanidine daily as long as the symptoms persisted, the aforementioned antibiotics being reserved for more serious cases.

Before arriving at Port "B," the incidence of diarrhea was reduced to four or five new cases per day. The ship remained at this port for three days, and liberty was granted ashore. No fresh food of any kind was brought on board, and the water was chlorinated to one part per million.

After leaving South America, the ship was under way for about 48 hours to Guantanamo Bay, Cuba. During this period a sudden increase in the daily incidence of new cases of diarrhea, to 25, was noted. Treatment was carried out as described previously and there was a sudden decrease in the number of new cases on the day of arrival in Guantanamo Bay. During the four days the ship was in port, the majority of the crew were ashore at some time and consumed local products.

Almost immediately after leaving Guantanamo Bay, there was another severe increase in the incidence of new cases of diarrhea. During the three-day cruise to Norfolk, the daily incidence rose to a peak of about 70 new cases. The day after the ship arrived in Norfolk, the services of a preventive medicine unit were requested to evaluate and control the situation. As of that day, the incidence rates for the component parts of the personnel of the ship are shown in table 1.

TABLE 1. *Incidence of diarrhea*

	Total on board	Cases	Incidence (percent)
Crew	1,081	344	31
Officers	72	12	16
Midshipmen	332	139	41
Total	1,485	495	33

It was decided to obtain rectal cultures from 100 of the crew (including all food handlers). The ship was placed under limited quarantine for 48 hours, and every person aboard who had not been treated previously with terramycin was given 3 grams of this drug. At the end of the 48 hours, repeat rectal cultures were obtained from the same 100 crew members. Final rectal cultures were obtained from the same group 30 days later. The first series, run shortly after the arrival of the ship in Norfolk, revealed 11 positive cultures of *Shigella flexneri* 2a. None of the positive cultures were obtained from food handlers. All of the 48-hour cultures and the 30-day cultures were negative.

Even among the more severely ill patients, practically all symptoms ceased after treatment with terramycin for 24 hours. For four days following the prophylactic administration of this drug, no old or new cases of diarrhea were seen in sick bay, but on the fifth day five patients with very mild afebrile diarrhea were seen. These were cultured immediately and then were re-treated with 6 grams of terramycin over a three-day period. The cultures were negative for shigella and the patients became asymptomatic within 24 hours after the treatment was begun. Several members of the crew who were on leave at the time prophylactic treatment was given to all personnel on board developed severe febrile diarrhea, proved to be shigella by culture. They were treated with terramycin and remained asymptomatic. To our knowledge there have been no relapses or other occurrences of shigellosis on the ship

to the date of writing. Cultures repeated from random sample groups of this ship's crew are to be done in the near future.

ASSOCIATED CASES

The day following the arrival of the ship in Norfolk, a cook on another vessel, which was docked on the port side of the same pier, reported to sick bay with acute watery diarrhea. He was treated symptomatically, returned to duty, and worked all day. That night the symptoms became more severe; he was admitted to sick bay and was treated with aureomycin.

Two new cases of febrile diarrhea developed on this ship two days later, three cases three days later, and finally four cases four days later. All of these patients were treated immediately with either aureomycin or terramycin and responded rapidly to either drug. Five days after the first case appeared, the preventive medicine unit was advised of the situation, and rectal cultures were done on these 10 men. Two of the patients whose symptoms had first appeared the night before showed cultures positive for *Shigella flexneri* 2a. The other eight cultures were negative. Specimens from these 10 men were again cultured a week later and all were negative at that time.

COMMENT

It is fairly safe to assume that this organism, *Shigella flexneri* 2a, was introduced aboard Ship "X" from an infected local shore population via the "feces, flies, food, fingers" route, and that once installed among the closed population on board it was perpetuated by direct or indirect contact with those who were shedding shigella. The limitation of space on board most naval vessels results in very close contact among all personnel, and facilitates the passage of shigella from person to person. In his report of the San Pedro Bay epidemic, Cheever[3] stresses personal contact and the contamination of sea water as the two most important factors in perpetuating and spreading the infection. Mount and Floyd[4] pointed out the possibility that some defect in shipboard plumbing may result in pollution of fresh-water lines with contaminated sea water.

A sanitary inspection made aboard Ship "X" shortly after arrival, revealed the following major discrepancies:

(1) Salt-water lines were in use in the scullery and vegetable-preparation room.

(2) Rubber hoses were attached to numerous potable-water outlets, thereby making possible the return of used water into the potable-water system by back siphonage.

(3) Poor housekeeping practices were observed in the commissary spaces.

(4) Food service personnel were not being trained and were not properly supervised in regard to sanitary practices.

So far as can be determined there was no contact between personnel of Ship "X" and those of other vessels in port, previous to the time that every person on board was given terramycin. Flies or contaminated sea water, or both, probably played important roles in the transfer of the organism. Cultures of sea water from the area and from potable-water lines on Ship "X" and on other ships in the port were repeatedly negative for shigella, however, as were cultures from flies caught in this area.

SUMMARY AND CONCLUSIONS

In an epidemic of 495 cases of shigellosis which recently occurred aboard a naval vessel midshipmen and unrated men had, by far, the greatest attack rate. An attempt was made to eradicate a potentially large reservoir of shigella infection by treating all personnel aboard that vessel, with or without symptoms, with terramycin.

Terramycin appears to be extremely effective in the treatment of patients with dysentery caused by *Shigella flexneri* 2a and apparently has reduced the carrier rate on board the ship to an extremely low figure.

In spite of greatly increased emphasis on sanitation and habitability aboard vessels of the United States Navy, shigella organisms are still capable of greatly decreasing the effectiveness of these ships as fighting units.

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It is a rule of thumb among educators, that for every teaching hour, two hours must be spent in preparation. It is an old rule and a good rule and it deserves the respectful consideration of any physician who calls himself a teacher.

—GEORGE E. MILLER, M. D.
in *Diseases of the Chest*, p. 453, Oct. 1953

DIAGNOSTIC ERRORS IN SEVERE GASTROINTESTINAL HEMORRHAGE

EDDY D. PALMER, *Lieutenant Colonel, MC, USA*

IT was previously proposed[1] that patients with massive upper gastrointestinal hemorrhage should ideally be examined esophagoscopically, gastroscopically, and roentgenologically immediately on hospitalization, in order that the source might be identified with assurance as quickly as possible. The feasibility and safety of these procedures under conditions of massive hemorrhage, and the assistance afforded both medical and surgical therapy have already been discussed[1] in connection with the presentation of 121 patients. It was pointed out that previous knowledge of the existence of a potential bleeding source may be most misleading when used to guide therapy for the current hemorrhage.

There remains to be determined whether the "vigorous diagnostic approach" permits significantly better therapeutic results than the delayed diagnostic approach. This article deals with experiences in emergency treatment based on the initial clinical working diagnosis and with the results of late diagnostic study among another group of patients with hematemesis, from the same patient source and managed in the same surroundings. These patients, however, had not necessarily been free of gastrointestinal symptoms previously and were not investigated for the bleeding source until emergency therapy had been carried out and the acute clinical emergency had passed.

MATERIAL AND METHODS

Two hundred and twelve personally observed patients, who had been hospitalized at this or another Army hospital because of hematemesis, met the criteria for inclusion in this study: (1) the patient in each instance required transfusion of at least 1,000 cc. of whole blood during the first six hours after admission, and (2) no search had been made for the bleeding site until at least seven days had passed since cessation of the hemorrhage, except that permitted by an emergency laparotomy in 25 patients. When diagnostic studies were not done, a working diagnosis based on the initial history and physical examination, with much

From Walter Reed Army Hospital, Washington, D. C.

emphasis placed on a history of a previously diagnosed upper gastrointestinal disease and on statistical diagnostic expectancy, was decided on for each patient shortly after admission, and therapy was turned in a suitable direction. All patients who survived the hemorrhage were eventually submitted to a thorough diagnostic study, including roentgenologic examination in all, gastroscopic examination in 164, gastric mucosal biopsy in 151, and esophagoscopic examination in 166. All of the patients who died were studied at autopsy.

TABLE 1. *Comparison of correct diagnosis with initial working diagnosis in 212 patients with severe upper gastrointestinal hemorrhage*

Cause of hemorrhage	Correct diagnosis (number of cases)	Working diagnosis (number of cases)
Duodenal ulcer	32	134
Esophageal varices	68	45
Erosive gastritis	22	6
Gastric ulcer	16	3
Hiatus hernia	13	3
Esophagitis	7	2
Mallory-Weiss syndrome	6	7
Stomal ulcer	3	7
Leukemia of stomach	2	1
Rendu-Osler-Weber's disease	2	1
Gastric polyps	2	0
Esophageal ulcer	1	0
Metastasis to stomach	1	0
Thrombocytopenia	0	1
Common bile duct lesion	1	0
Leiomyoma of stomach	1	0
Sarcoidosis of stomach	1	0
Carcinoma of stomach	1	0
Esophageal diverticulum	1	0
Aortic aneurysm	1	2
Undetermined	31	

There were 24 women among the 212 patients. The number of patients by age per decade from the second through the eighth decades was, respectively, 9, 49, 51, 34, 39, 23, and 7.

TABLE 2. *Influence of knowledge of existence of potential bleeding site on the diagnosis in 68 patients*

Cause of hemorrhage	Number of patients			
	Previously diagnosed potential cause of hemorrhage	Condition for which patient was treated	Correct diagnosis	Previously known potential cause, accounting for present hemorrhage
Duodenal ulcer	31	35	21	16
Esophageal varices	13	14	17	9
Gastric ulcer	4	3	3	1
Hiatus hernia	3	3	5	1
Stomal ulcer	9	7	3	3
Erosive gastritis	3	2	4	0
Leukemia of stomach	1	1	2	1
Esophagitis	2	2	1	1
Rendu-Osler-Weber's disease	1	1	2	1
Gunshot wound of stomach	1	0	0	0
Mallory-Weiss syndrome	–	–	2	–
Esophageal ulcer	–	–	1	–
Gastric polyps	–	–	1	–
Aortic aneurysm	–	–	1	–
Undetermined	–	–	5	–

The data presented are based on the diagnoses established after the bleeding had ceased and were determined by the demonstration of a lesion known to have bleeding potentialities. When more than one potential bleeding lesion was found in a patient—a common experience—the decision regarding the "correct" diagnosis was based on indirect evidence, suggesting recent activity, such as acute erosive esophagitis overlying esophageal varices, the usual roentgenographic signs of ulcer activity, erosive gastritis in the herniated portion of a hiatus hernia, or the typical history of the Mallory-Weiss syndrome.

FINDINGS

Table 1 shows a comparison of the preliminary and final diagnoses in the 212 patients. Duodenal ulcer and stomal ulcer were often suspected, but erosive gastritis, gastric ulcer, hiatus hernia, and esophagitis frequently were demonstrated as a final diagnosis. The source of hemorrhage was undetermined in 31

patients. In the final analysis it was found that the working diagnosis had been correct in 75 patients (35 percent) and incorrect in 109. It was not possible to decide the correctness of the diagnosis in 28 instances.

The emergency treatment which had been instituted on the basis of the working diagnosis proved to have been the optimum in 116 instances. Thus, emergency treatment aimed at bleeding duodenal ulcer would in most cases be considered optimum if the correct diagnosis were found to be gastric ulcer. Treatment was incorrect or inadequate in 68 patients. The adequacy of therapy could not be judged in 28 instances.

Diagnostic errors often were due to the assumption that the current hemorrhage originated from a lesion that had been recognized during a previous medical investigation. The history of such a lesion was obtained at the time of admission in 68 patients (table 2). All but five of the 68 were given emergency treatment aimed at such a lesion but it was found that only 49 percent of these working diagnoses were correct.

TABLE 3. *Data on 18 deaths as a result of gastrointestinal hemorrhage*

Cause of hemorrhage	Number of patients			
	Correct diagnosis*	Condition for which patient was treated	Treated for correct diagnosis	Emergency operation
Esophageal varices	9	12	9	0
Erosive gastritis	3	1	0	2
Gastric ulcer	1	0	0	1
Duodenal ulcer	2	4	0	1
Esophageal ulcer	1	0	0	1
Leukemia of stomach	2	1	1	0

*Correct diagnosis as eventually determined by combined diagnostic methods.

Eighteen patients died as a result of hemorrhage, five following an emergency operation (table 3). Hemorrhage from esophageal varices was the cause of death in 9 patients even though each had received optimum emergency therapy (tamponade). In only 10 of the 18 patients did the working diagnosis prove correct. Three of the five operations (subtotal gastrectomy) accomplished their purpose, even though in two of these patients universal erosive gastritis was found. Subtotal gastrectomy, however, is not considered the optimum treatment for this condition. Surgical intervention in the other two patients was ineffectual because the

TABLE 4. *Results of emergency operation in 25 patients*

Cause of hemorrhage	Correct diagnosis*	Pre-operative diagnosis	Pre-operative diagnosis correct	Operation proved proper procedure	Laparotomy only
Gastric ulcer	6	2	1	6	
Duodenal ulcer	4	17	3	3	1
Esophageal varices	4	2	2	3	
Erosive gastritis	2	0	0	0	
Esophageal ulcer	1	0	0	0	1
Hiatus hernia	1	0	0	0	1
Metastasis to stomach	1	0	0	0	1
Sarcoidosis of stomach	1	0	0	1	
Stomal ulcer	1	1	1	1	
Common bile duct lesion	1	0	0	0	1
Thrombocytopenia	0	1	0	0	
Undetermined	3	2	0	—	2

*Correct diagnosis was eventually determined by combined diagnostic methods.

bleeding site could not be found. Autopsy showed that the responsible lesion in one had been a duodenal ulcer and in the other, an esophageal ulcer.

TABLE 5. *Comparison of present series with 121 patients in whom the "vigorous diagnostic approach"[1] was used.*

Results	Delayed diagnostic approach in 212 cases (percent)	Vigorous diagnostic approach in 121 cases (percent)
Immediate diagnosis correct	35	78
Immediate therapy proved optimum	55	82
Source of hemorrhage undetermined	15	14
Deaths from hemorrhage	8	4
Emergency therapy directed at correct diagnosis	56	100*
Emergency operation	12	16
Preoperative diagnosis correct	28	100*
Operation proved to be the proper procedure	56	100*

*In the "vigorous diagnostic approach" to massive upper gastrointestinal hemorrhage, duodenal ulcer was diagnosed whenever bright blood was observed through the gastroscope to be flowing back into the stomach through the pylorus, even though the lesion itself was not seen. In these groups the diagnosis based on this observation proved to be correct in each case.

Twenty-five patients were operated on in an effort to stop the hemorrhage (table 4). Subtotal gastrectomy was done in 13 instances, vagotomy and gastroenterostomy in two, subtotal esophagogastrectomy in one, and splenectomy in two. In seven instances conditions discovered at laparotomy did not suggest or permit a definitive operation. The diagnoses in these seven patients were esophageal ulcer, hemorrhage from common bile duct, duodenal ulcer, metastasis to stomach, and hiatus hernia, each in one patient, and undetermined diagnosis in 2 patients. In only 7 of these 25 patients did the preoperative diagnosis prove to be correct. In 14 patients, however, the surgical operation performed was compatible with the final diagnosis. Twenty of the patients operated on survived.

COMMENT

Certain aspects in the management of severe hemorrhage were notably poorer in this series than in the group approached by the vigorous diagnostic technic. A comparison is outlined in table 5.

The most important differences were in the proportion of cases which terminated fatally and the proportion in which emergency laparotomy permitted a proper and definitive surgical procedure.

The list of final diagnoses among the two series is of special interest because it contains several diseases which are not often found in such listings and because some diseases which are supposed to be responsible for a large proportion of upper gastrointestinal hemorrhages were not impressive by their frequency. The supposed probability of duodenal ulcer in patients whose history and physical examination do not suggest another diagnosis proved to be the most misleading consideration in selection of the working diagnoses. Thus, 63 percent of the present series were given emergency therapy for duodenal ulcer, but in the final judgment it was found that only 15 percent had been bleeding from duodenal ulcer. Similar disillusionment was experienced with patients whose physical examination demonstrated the picture of classical Laennec's cirrhosis[2]—in a large portion the bleeding was found to be coming from sources other than esophageal varices.

The technic of complementing clinical judgment and roentgenologic examination with esophagoscopic and gastroscopic study during the period of active bleeding will alter considerably one's thinking regarding the usual causes of hemorrhage. In particular, it will be found that misguidance more often than help is to be acquired from knowledge of an already demonstrated gastrointestinal disease and from the findings on physical examination.

SUMMARY

Because every instance of hematemesis must be considered of urgent importance, and because medical or surgical technics are available for direct attack on many of the lesions which may be responsible for massive upper gastrointestinal hemorrhage, it is particularly important that a precise diagnosis be made without delay. A vigorous diagnostic approach, consisting of esophagoscopic, gastroscopic, and roentgenographic studies during the first few hours of hospitalization, has proved both safe and feasible. The present review of 212 patients with hematemesis who were treated on the basis of the history and physical findings alone revealed an important amount of diagnostic error, with inadequate or suboptimal therapy as a consequence.

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LOCALIZED FIBROUS LESIONS IN THE METAPHYSES OF LONG BONES

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RAYMOND M. WILLIAMS, *Lieutenant, MC, USNR*

LOCALIZED fibrous lesions appearing in the metaphyses of long bones have been described in diagnoses as monostotic fibrous dysplasia, nonosteogenic fibroma, cystlike area, metaphyseal fibrous defect,[1] or periosteal fibroma. Hatcher[2] reviewed the origin of these different descriptive terms and attributed their diverse interpretations to various students of this lesion who have overemphasized certain secondary characteristics. Jaffe and Lichtenstein[3] consider them benign tumors formed from mature marrow connective tissue; Geschickter and Copeland[4] as variants of solitary bone cysts and benign giant cell tumors.

All of the lesions described, however, have certain similarities. They appear either in, or immediately adjacent to, the metaphysis of a long bone. The great majority are in the distal end of the femur or the proximal end of the tibia. The symptoms, if any are produced, are very mild. The lesions are usually discovered on routine roentgenographic examination. Roentgenographically, they have a loculated appearance. They originate at the metaphysis and become elongated in the axis of the bone. They are well circumscribed with scalloped edges, and later appear to migrate from the epiphyseal line. The roentgenographic and the pathologic pictures vary according to the age and activity of the lesion.[2] The pathologic appearance is that of fibrous connective tissue with multiple but contiguous foci, gray-yellow to yellow-brown in color. Microscopic examination reveals whorled bundles of connective tissue cells. Foam cells and giant cells are frequently present, depending on the stage of development and the lipoid content. A consistent and striking finding is the lack of osteogenesis.[5]

Epiphyseal defects are frequently found, in conjunction with metaphyseal lesions, on roentgenographic examination. Hatcher reported a series of 14 such cases, where osteochondritis of

From U. S. Naval Hospital, Portsmouth, Va.

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the tibial tubercle or of the patella led to the discovery of a metaphyseal fibrous defect. These constituted one third of his reported cases.

The cause of this condition is unknown. It is found commonly in children, but rarely in adults. Although it is benign and self-limiting, and no treatment is necessary, biopsy is advised to

Figure 1. Arrows indicate typical lesion of femoral metaphysis except for evidence of cortical defect.

confirm the diagnosis. Ponseti and Friedman reported one case where three separate and distinct fibrous metaphyseal defects in the same area of the upper humeral metaphysis appeared, developed, and regressed over a period of 13 years.

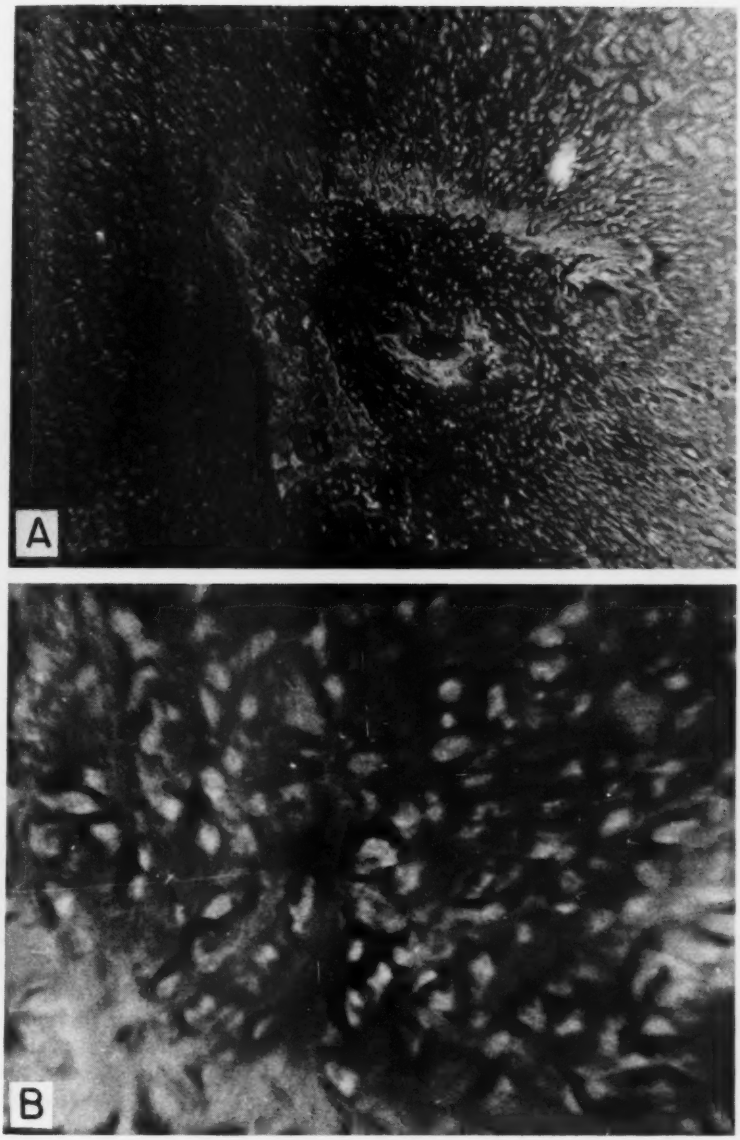

Figure 2. (A) *Low* (× 35) *and* (B) *high power* (× 100) *microscopic views of lesion showing fibrous connective tissue in whorled bundles. The area of osteogenesis in low power view is due to cortical defect.*

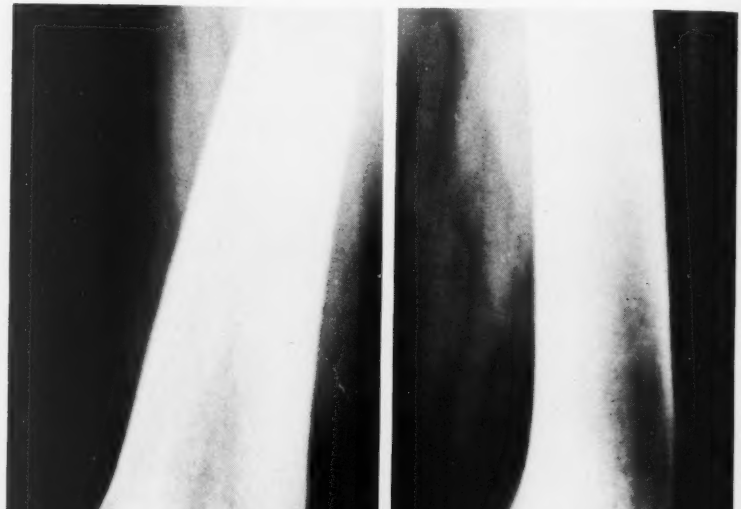

Figure 3. Postoperative roentgenograms of the same patient showing progressive obliteration of lesion six months after surgery.

CASE REPORT

This 13-year-old boy was first observed at another large military hospital because of pain in his right knee. Roentgenograms were taken at that time and a diagnosis of Osgood-Schlatter's disease was made. His leg was placed in a cylinder cast for six weeks. He was then brought to this hospital for removal of the cast and evaluation of the condition. Roentgenograms revealed an abnormal persistence of the epiphysis of the proximal end of the tibia and of the tibial tubercle, and a radiolucent defect in the metaphysis of the distal end of the femur measuring about 2½ by 1½ centimeters. This defect was on the medial border, and apparently extended through the cortex into the soft tissue (fig. 1).

The patient was admitted to the hospital on 4 February 1953. Physical examination was within normal limits except for the right knee, which was moderately swollen. There was moderate tenderness over the tibial tubercle, but no other significant findings. Complete blood count and urinalysis were normal. The

sedimentation rate was 8 mm. at the end of the first hour; blood calcium, 10.69 mg. per 100 cc.; inorganic phosphorus, 4.9 mg. per 100 cc.; and alkaline phosphatase, 11.1 Bodansky units per 100 cc. On 6 February 1953, a block resection was performed, at which time it was noted that the overlying cortex appeared normal and was not broken. A small amount of red-yellow fluid extruded from the area upon removing the block of bone. Microscopic examination revealed a disruption of the cortex by a defect which extended into the medullary cavity. This defect was made up of whorls of collagenous tissue composed of fibroblastic cells. Rare giant cells were seen. There was a small area of osteogenesis at the center of this fibrous mass. The pathologic diagnosis was periosteal fibroma (fig. 2).

Postoperatively the patient did well, and roentgenograms taken on 5 May 1953 revealed beginning obliteration of the bony defect. By 23 July 1953 he was freely ambulatory with no functional defect, and roentgenograms showed obliteration of the defect (fig. 3).

COMMENT

This case fulfills all the requisites of a metaphyseal fibrous defect except for two variances. First, surgical intervention was necessary because of the extension through the cortex even though such lesions are known to be benign. Secondly, the microscopic slides revealed a definite area of osteogenesis, which we considered to be the result of the cortical involvement. It is suggested that "metaphyseal fibrous defect" is a more accurate term for these lesions than "nonosteogenic fibroma."

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It is of unique interest that the first appendectomy performed in the United States by Hall at the Roosevelt Hospital, New York, in 1886, was done after a hernial sac was entered for what was apparently a strangulated hernia.

—PHILIP G. CREESE, M. D.
in *Surgery Gynecology and Obstetrics*, p. 645, Nov. 1953

SURGICAL CORRECTION OF DEVELOPMENTAL DEFORMITIES OF THE MANDIBLE

JACK B. CALDWELL, *Colonel, DC, USA*

SEVERE malocclusion was at one time disqualifying for military service, but is not at present. Because of revised physical standards, the surgical correction of developmental and other deformities of the jaws, which existed prior to military services, presents a new problem to Dental Corps officers.

A fair and equitable approach to this new problem was established. It is not practical to do a corrective operation on a person who is inducted for two years or less because he would be absent from duty for a minimum of five weeks while he recovered from the operation and would be required to be available for outpatient treatment for some time after that. Also the majority of the two-year inductees are too young to be considered for this corrective operation which is contraindicated until full jaw development has been reached at the age of 21 or 22 years. Most persons with deformity of the mandible despite the associated malocclusion appear well nourished and give no history of weight loss following entry into the service. Many are not especially conscious of their deformity and it should not be called to their attention unless there is good reason to do so. Career soldiers, on the other hand, deserve and need a corrective operation. Acceptance of patients for treatment is therefore based on the following arbitrary criteria: (1) The career man must desire and request the treatment, (2) jaw development must be complete, and (3) correction of the deformity will result in improved function of the mandible with accompanying cosmetic benefits.

The three principal deformities of the mandible are prognathism (protrusion), micrognathia (retrusion), and apertognathia (open-bite malocclusion). Causative factors are trauma, disease or infection, or, many times, growth disturbances or atavism. Pro-

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trusions and retrusions, as a result of developmental deformity, are encountered most frequently and are the subject of this paper. Prognathism is seen more frequently, but is less difficult to correct than is micrognathia.

PROGNATHISM

The mandibular deformity of prognathism can be corrected by a variety of operative methods. However, most of the methods commonly applied have numerous disadvantages and the final results are frequently of doubtful benefit. Recently I advocated

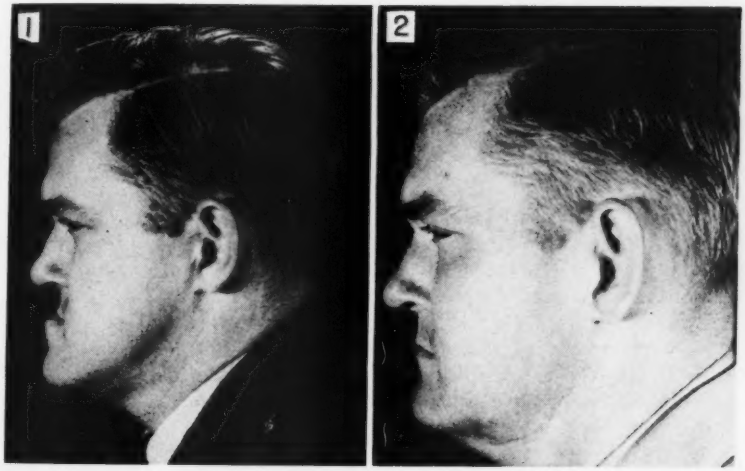


Figure 1 (case 1). Extreme mandibular prognathism. Figure 2 (case 1). Facial contour after surgical intervention.

a new approach to surgical correction of this deformity.[1] This procedure is one in which the correction is obtained by vertical osteotomy in the ramus of the mandible, the section being made from the sigmoid notch downward over the mandibular foramen and through the lower border of the mandible at the angle. The anterior portion of the ramus is decorticated on its lateral aspect prior to its repositioning posteriorly. This operation is most suitable in cases of extreme deformity and is ideal for any patient requiring more than 10 mm. of correction. It is not recommended for deformities of lesser degree where ostectomy in the body of the mandible gives a good result. Surgical correction of prognathic deformities of less than 10 mm. in men is discouraged. Slight prognathism is not objectionable, and moderately severe Class III malocclusion does not ordinarily interfere with function. The following case history illustrates vertical osteotomy in the mandibular rami.

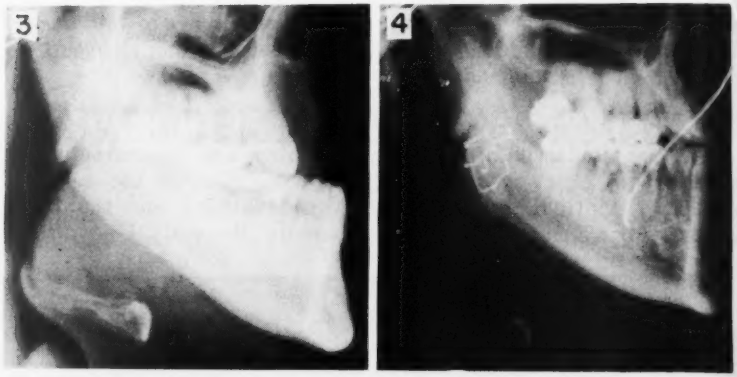


Figure 3 (case 1). A lateral cephalogram showing an 18-mm. protrusion of the mandible. Figure 4 (case 1). Surgical correction of prognathism by vertical osteotomy in the rami of the mandible produced normal skeletal contour.

Case 1. A 30-year-old man was admitted to this hospital on 13 April 1953 with a prognathic deformity requiring an 18-mm. correction (fig. 1). Routine preoperative examinations included posteroanterior and lateral cephalograms (fig. 3) of the skull, and study models (fig. 5). On 15 April, intramaxillary multiple loop wiring was placed on the teeth and the next day, under general anesthesia, bilateral vertical osteotomies were done. Thirteen days after the operation, the patient went home on convalescent leave. Four weeks postoperatively the intermaxillary fixation was removed and he was permitted complete function. He returned to duty in a little more than one month with functional

Figure 5 (case 1). A model of the teeth showing the severe Class III malocclusion. Masticatory function was minimal. Figure 6 (case 1). The malocclusion shown in figure 5 has been corrected to normal through surgical methods.

occlusion (fig. 6), improved appearance (fig. 2), and an entirely new psychologic outlook. When seen five months later, scarring was negligible, no motor or sensory nerve damage was present, and his temporomandibular joints functioned normally. Final cephalograms disclosed normal skeletal contours (fig. 4).

MICROGNATHIA

Mandibular retrusion is seen less frequently than prognathism. In the military service surgical correction of moderate deformities of this type is not justified but extreme retrusion of the lower jaw should be corrected because it is objectionable both from a functional and a cosmetic viewpoint.

Figure 7 (case 2). Extreme retrusion (micrognathia) of the mandible. Figure 8 (case 2). The patient's appearance was improved by the sliding osteotomy.

Correction of this deformity can be accomplished by a sliding osteotomy as suggested by Kazanjian and Converse[2] and is performed in two stages. Theoretically the sectioning of the body of the mandible should be accomplished so that when the mandible is advanced anteriorly the cut surfaces will remain in contact. If first consideration is given to proper occlusal relation and masticatory function, a space may result. Therefore, the placement of fresh medullary bone chips from the ilium is included in the procedure of this operation. The following case is illustrative.

Case 2. A 34-year-old man with marked retrusion of the mandible (fig. 7) was admitted to this hospital on 23 April 1951.

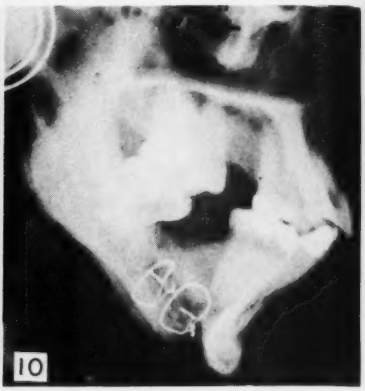
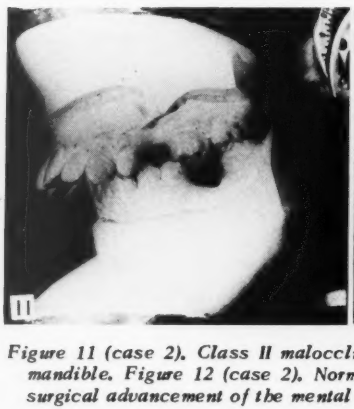


Figure 9 (case 2). Lateral cephalogram showing the skeletal deficiency. Figure 10 (case 2). A postoperative lateral cephalogram showing normal jaw relation and improved skeletal contour.

Cephalograms disclosed gross deficiency and retrusion of the mandible (fig. 9). Extreme Class II malocclusion was present (fig. 11). The patient was taken to the operating room on 25 April 1951 where, under general anesthesia, bilateral sliding osteotomies were done. Cancellous bone from the ilium was placed in the spaces created as the anterior portion of the mandible was advanced. Splints had been designed and were applied the day before the operation. Connecting bars had also been cast to accommodate the sections of the splint in an arbitrarily established new anterior position of the mandible (fig. 13). The application of these connecting bars was accomplished after the osteotomy was complete and the jaw was mobilized. They were secured by previously prepared size .080 screws.[3] Thus,



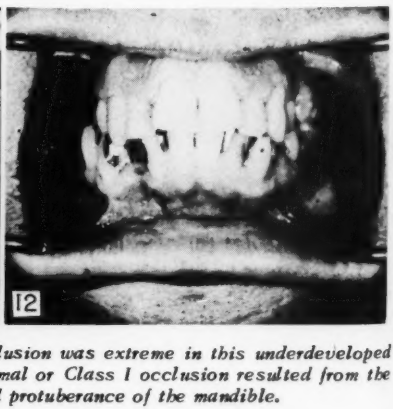


Figure 11 (case 2). Class II malocclusion was extreme in this underdeveloped mandible. Figure 12 (case 2). Normal or Class I occlusion resulted from the surgical advancement of the mental protuberance of the mandible.

little time and effort was expended on intraoral fixation during the operation. Intermaxillary fixation as an adjunct to splinting was maintained for four weeks. Following removal of the intermaxillary fixation and minor occlusal correction, the patient was

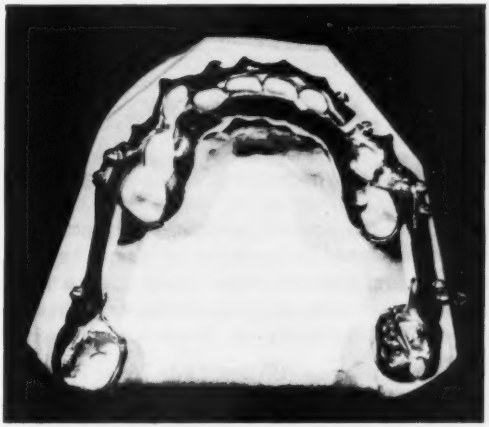


Figure 13 (case 2). Splints for immobilization of the sectioned mandible were of the sectional screw-lock type with connecting bars secured with size .080 screws.

discharged to duty, after 35 days of hospitalization, with functional jaw relations (fig. 12) and a greatly improved appearance (fig. 8). The postoperative cephalogram disclosed a more normal skeletal contour (fig. 10).

SUMMARY

Surgical correction of the developmental deformities of the mandible, prognathism and micrognathia, can be done for career military personnel with a minimum period of time lost from duty. By thorough study and preparation of the patient prior to admission, and the use of well-planned, carefully designed splints, successful end results are assured if the technicalities of the operative procedures are thoroughly understood and followed.

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A METHOD FOR THE SEPARATION OF PROTEIN FRACTIONS

A Preliminary Report

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THE need for a simple and rapid procedure for separating the protein components of biologic systems has long been apparent. It was necessary that the products be undenatured, highly purified, concentrated, and stable; and that the method be adaptable to either laboratory or large-scale operations. Such a procedure is reported here.

Hitherto, the separation of fractions from complex protein mixtures has generally been accomplished by: (1) lowering the ionic strength of the solution through the removal of salts, by dialysis[1] or ion-exchange resins[2] or dilution;[3] (2) raising the ionic strength of the solution by the addition of such salts as ammonium sulfate[4,5] or sodium sulfate;[6,7] or (3) precipitation with organic solvents, particularly ethanol, under carefully controlled conditions of protein concentration, ionic strength, ethanol concentration, pH, and temperature.[8,9]

These methods have given limited satisfaction. Although the separation of proteins by lowering the ionic strength of the solution may be of value in the preparation of very small quantities of material, large-scale operations have been either impracticable or too costly. Furthermore, the fractions obtained were often found to be complex protein mixtures. Gross fractions may be separated by raising the ionic strength of the solution, but this method does not provide individual fractions with a high degree of homogeneity. Moreover, the salts that are added to precipitate the proteins must be removed before any fraction can be used therapeutically. When organic solvents are used, fractionation must be done at reduced and carefully controlled temperatures to avoid denaturation of the protein. This latter method is adaptable to larger operations and has been useful in the preparation of serum albumin solutions for shock therapy, but it is too complicated for small-scale laboratory work.

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USE OF SODIUM TETRAMETAPHOSPHATE

This report describes a new process involving the use of sodium tetrametaphosphate* for the separation of protein fractions from various biologic systems. Tetrametaphosphate differs from the so-called hexametaphosphate because it does not act as a sequestering agent.[10] In alkaline solution, the tetrametaphosphate ion undergoes rapid hydrolysis to ortho- and triphosphates. The tetrametaphosphate appears to have a cyclic structure, which may account for its unusual behavior as a protein-precipitating agent.

This ability of sodium tetrametaphosphate to precipitate proteins is dependent on the pH of the solution to be treated. The addition of sodium tetrametaphosphate produces no visible precipitation until an acid or acid salt is added to lower the pH. Precipitations may be carried out at room temperature or at reduced temperatures without any apparent indication of denaturation.

A study was made of the separation by the sodium tetrametaphosphate method of a number of the protein components of human blood plasma, a typical biologic system. Essentially similar results were obtained with fresh plasma, plasma from outdated whole blood, plasma which had been stored at room temperature for as long as one year, frozen plasma, and dried plasma.

METHOD

In treating blood plasma, a solution of sodium tetrametaphosphate was added in an amount sufficient to provide 1 gram for each 100 cc. of plasma. Citric acid, or any other suitable acid or acid salt, was then added to lower the pH stepwise to approximately 4.0, fractional precipitates being obtained at intermediate pH values. It was found advisable to add the tetrametaphosphate before the acid in order to prevent local denaturation of the protein by the acid. The precipitates that formed were readily removed by centrifugation. They could be restored to solution by adding distilled water and adjusting the pH to neutrality with a dilute base. The desired concentration in the final solution could be obtained by adjusting the amount of water added, in relation to the amount of solids present.

Electrophoretic analyses showed that the precipitate separating from the plasma when the pH was lowered to 4.9 consisted of fibrinogen, a small amount of alpha globulin, and a trace of albumin. The fraction that precipitated when the pH of the filtrate was lowered to 4.4 still consisted largely of fibrinogen, with slightly increased amounts of alpha globulin and albumin. The

*Sodium tetrametaphosphate under the trade name Cyclophos was obtained from Victor Chemical Works, Chicago, Ill.

fibrinogen found in these two fractions was clottable with thrombin, indicating that the protein was not denatured when the pH was lowered. The fraction that precipitated when the pH of the filtrate was further lowered to 4.2 consisted for the most part of albumin, plus some alpha globulin, beta globulin, and a very small amount of fibrinogen. The fraction precipitated at a pH of 4.0 was largely albumin, with a small amount of alpha globulin and beta globulin. The remaining effluent was practically pure gamma globulin. This could be precipitated by an organic solvent, preferably at a reduced temperature to avoid denaturation. Each fraction could be further subfractionated by closer adjustment of the hydrogen-ion concentration.

SUMMARY

The protein components of biologic systems can be separated by an improved method using sodium tetrametaphosphate and acid or acid salts, the latter added in successive steps. The new process has been found useful when applied to human blood plasma. It can be performed with equal success on small amounts of material or in large-scale operations.

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ACUTE MASTITIS OF THE NEWBORN DUE TO MICROCOCCUS PYOGENES VAR. AUREUS

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IN recent years various workers have reported as high as 75 percent of the strains of *Micrococcus pyogenes* var. *aureus* cultured from various sources to be penicillin-resistant.[1-4] With few exceptions these have been sensitive to aureomycin and, in a slightly smaller percent, to terramycin as well. Accordingly, a broad-spectrum antibiotic such as aureomycin has been advocated as the treatment of choice in infections due to these organisms.[3,5] It was my experience, however, that antibiotic therapy usually was not sufficient to cure infants with a breast abscess due to *M. pyogenes* var. *aureus* and, in the majority, an operation was required.

Fourteen (two percent) of 665 infants delivered in this hospital during a seven-month period developed acute mastitis (table 1), two of them less than five days after discharge from the hospital.

No cause could be established but the possibility of a hematogenous spread with localization in an engorged area was postulated. Most of the infections were found to be in the area under the breast tissue and to have had no apparent connection with the ducts (fig. 1). In no case was there any skin infection in other members of the family. In one instance the mother had attempted to express secretion from the infant's breast (fig. 2). *M. pyogenes* var. *aureus* was found on throat culture in four infants. Positive throat cultures in as high as 62 percent in healthy newborn infants have been reported.[4]

All patients were treated with warm, moist compresses and some antibiotic, both prior to and following surgical drainage. This was found to be the most effective treatment. Proper care at home is important.

SUMMARY

The over-all incidence of acute mastitis due to *M. pyogenes* var. *aureus* in newborn infants at an Army hospital during a

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TABLE 1. *Patients with acute mastitis*

Patient	Age	Culture		Treatment	Miscellaneous
		Throat	Abscess		
1	15 days	M. pyogenes var. aureus	M. pyogenes var. aureus** ***	Penicillin	Traumatic massage at home. Cleared in 5 days.
2	28 days	Diplococcus pneumoniae	M. pyogenes var. aureus** +	Penicillin and surgical drainage	
3	24 days	Negative	M. pyogenes var. aureus** +	Penicillin and surgical drainage	
4	9 days			Penicillin	Cleared in 4 days.
5	21 days	Negative	M. pyogenes var. aureus** +	Aureomycin and surgical drainage	
5	28 days	Diplococcus pneumoniae M. pyogenes var. aureus		Penicillin, streptomycin, and surgical drainage	Recurrence with extension under pectoral muscles.
6	18 days	Escherichia coli	M. pyogenes var. aureus** +	Aureomycin and surgical drainage	
7	28 days	M. pyogenes var. aureus	M. pyogenes var. aureus** +	Aureomycin and surgical drainage	Penicillin prior to admission.

TABLE 1. *Patients with acute mastitis*—Continued

TABLE 1. *Patients with acute mastitis*—Continued

Patient	Age	Culture		Treatment	Miscellaneous
		Throat	Abscess		
8	10 days	M. pyogenes var. aureus		Penicillin, streptomycin, and surgical drainage	
9	12 days	Negative	M. pyogenes var. aureus** +	Penicillin, streptomycin, and surgical drainage	
10	28 days	Beta hemolytic streptococcus		Penicillin and streptomycin	Vomited aureomycin. Cleared in 3 days.
11	10 days	Beta hemolytic streptococcus	M. pyogenes var. aureus, nonhemolytic* +	Penicillin, streptomycin, and surgical drainage	Vomited aureomycin.
12	6 days			Aureomycin	Cleared in 4 days.
12	19 days	Negative	M. pyogenes var. aureus** +	Aureomycin and surgical drainage	Sudden recurrence with fluctuation in 24 hours.
13	15 days	Negative	M. pyogenes var.. aureus** +	Aureomycin and surgical drainage	
14	14 days	Negative	M. pyogenes var. aureus* +	Aureomycin and surgical drainage	One of twin girls; the other not affected.

*Sensitive to penicillin. +Sensitive to aureomycin. **Not sensitive to penicillin. ***Not sensitive to aureomycin.

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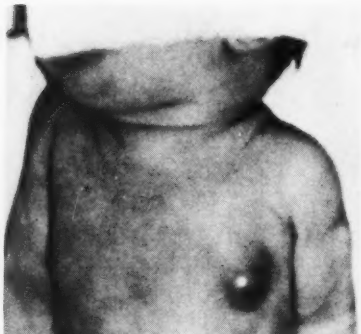

Figure 1. Appearance of rapidly developing unilateral abscess. Figure 2. Appearance of bilateral abscess.

seven-month period was two percent. Treatment of the 14 patients with antibiotics indicate that surgical intervention at the proper time is essential for complete recovery of the patient.

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First Injection of Morphine

On November 28, 1853, the first hypodermic injection of morphine for the relief of pain was given by Dr. Alexander Wood, lecturer on preventive medicine. This fact is recorded in the *Edinburgh Medical and Surgical Journal* of April 1, 1855.

in *The Medical Journal of Australia,*
p. 827, Nov. 28, 1953

SPONTANEOUS PNEUMOPERITONEUM

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ROBERT I. GARRETT, *Lieutenant, MC, USN*

SPORADIC reports of cases of "spontaneous" pneumoperitoneum[1-5] have appeared in the literature, and different causative factors have been advanced to explain the condition, but true spontaneous pneumoperitoneum in the absence of any primary pathology is extremely rare. We desire to report such a case and to discuss the cause and prevention of this condition.

CASE REPORT

The 23-year-old wife of a naval officer had been treated in the prenatal clinic through her first and second pregnancies. On 30 June 1952 and on 16 June 1953, she delivered spontaneously a normal infant at term. Both prenatal periods were uncomplicated, as was the first postpartum recovery. Following delivery of the patient's second child, her immediate course was uneventful and she was released from the hospital on 18 June 1953.

On the morning of 29 June 1953, the patient began postpartum exercises consisting of three sit-ups and assuming the knee-chest position for five minutes. These were repeated just prior to taking an afternoon nap. She was awakened about three hours later by sharp pain in the right lower part of her chest, at the approximate level of the diaphragm. This was aggravated by deep inspiration. When in a supine position, she was markedly dyspneic and the pain became unbearable. These symptoms were partially relieved by sitting. Shortly after the onset of symptoms, she was seized with a severe shaking chill and continued to have chills and fever until admitted to the hospital about four hours after the onset of pain. The patient gave no history of cough or recent upper respiratory infection, but there had been an aching pain in her right lower leg, three days prior to admission, which gradually subsided. She also reported vague abdominal distress in 1949, which was controlled by a bland diet and alkalies.

Observation of the patient revealed marked dyspnea in the supine position with alleviation of symptoms after turning on her

From U. S. Naval Hospital, Great Lakes, Ill.

right side. When walking, there was a slight limp favoring the right leg. The temperature was 102.2°F.; pulse, 94; respiration, 24; and blood pressure, 122/80. Physical and roentgenographic examinations showed the lung fields to be negative except for a Ghon tubercle, which had been noted in previous roentgenograms since March 1952, and air in moderate amount under both hemidiaphragms. There was considerable tenderness in the epigastrium and in both lower abdominal quadrants and some tenderness in both breasts and in the right popliteal space.

The laboratory findings were: erythrocyte count, 3,710,000; hemoglobin, 8.5 grams; hematocrit, VPC 38 per 100 ml.; prothrombin time, normal; leukocyte count, 10,500 with 78 percent neutrophils, 16 percent lymphocytes, 4 percent monocytes, and 2 percent eosinophils; urinalysis (catheterized specimen), negative.

Following admission the patient developed severe pain in the left lower part of her chest. The history of gastrointestinal distress which was relieved by bland diet and alkalies, the tenderness now present in the upper part of the abdomen, with free air under the diaphragm, and the chest pain which radiated to the shoulder blade, especially on lying down, led us to believe that a ruptured duodenal ulcer was the most reasonable diagnosis. Because the pain was increasing, a laparotomy was deemed necessary.

Approximately 16 hours following admission, the abdomen was opened through an upper right pararectus incision. Upon opening the peritoneum, air pressure was released. The stomach, duodenum, jejunum, ileum, and large bowel, throughout their entire length, were grossly normal. The lesser peritoneal cavity was entered and investigated, but no abnormalities were found. The uterus was larger and softer than anticipated at 14 days post partum. The fallopian tubes and ovaries were normal and the peritoneum presented a healthy appearance, with no evidence of inflammation. The abdomen was closed in layers.

The patient's postoperative course was uncomplicated. There was dramatic relief of her chest and abdominal pain. On her first postoperative day a portable roentgenogram of her chest showed that the lungs were clear with no air present under the diaphragm. She was discharged on the eleventh postoperative day.

DISCUSSION

Of the previously reported cases, one was an 81-year-old woman in whom air was present in the peritoneal cavity following severe wretching in the knee-chest position. Another was a 25-year-old woman who developed spontaneous pneumoperitoneum in her fourth postpartum week following bending over to move a small table. In each of these cases, it was assumed that the air

entered the peritoneal cavity through the genital tract. Dodek and Friedman[1] pointed out that air usually enters the vagina during knee-chest exercises, and frequently is the cause of fatal air emboli due to its entrance into the blood stream through an open vessel in a postpartum uterus.

In the case presented, we believe that the air also entered the peritoneal cavity of the patient through the genital tract during knee-chest exercises. Although this condition is extremely rare, as noted by the paucity of these cases in the literature, it should be considered in the differential diagnosis of pneumoperitoneum in a postpartum patient whose uterus has not undergone complete involution.

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Surgical Treatment of Aneurysms

Aneurysm of the thoracic or abdominal aorta is a fatal disease; death usually results from rupture and hemorrhage within a few months after symptoms appear. Likewise, aneurysms involving the peripheral arteries may cause death from leaking or rupture, but loss of a limb, as the result of gangrene secondary to either thrombosis or embolism, is the common complication. Hence, if the patient's general condition and life expectancy warrant it, surgical treatment ought to be advised. Those methods now available should be used in surgical treatment, even though we are well aware of their shortcomings. Furthermore, we must search increasingly for better surgical methods against this condition.

—JOHN C. IVINS, M. D.
in *Proceedings of the Staff Meetings of The Mayo Clinic,*
p. 706, Dec. 16, 1953

TRAUMATIC DIPLOIC HEMATOMAS OF THE SKULL

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HAROLD W. LUEDERS, *First Lieutenant, MC, USA*
JOHN L. MOYER, *First Lieutenant, MC, USA*

HEMORRHAGE into the superficial scalp and dissecting hematomas of the subperiosteal space frequently follow direct cranial trauma. Cephalhematoma is rare in newborn infants. An incidence of 0.6 percent was found in a representative series of 60,000 deliveries,[1] but the incidence increases in protracted labor due to cephalopelvic disproportion. The extravasation of blood beneath the periosteum is usually absorbed in from three to six weeks. Occasionally, the elevated periosteum deposits bone, and a cyst is formed between the skull and ossified periosteum.[2] This process rarely occurs in adults. No such cases were recognized at the Johns Hopkins Hospital during a 35-year period. In 1934, in a comprehensive review of cyst formations of the skull, Chorobski and Davis[3] reported three cases under the diagnosis of "encapsulated cephalhaematoma." These cystic hematomas were found between the periosteum and skull in two patients (as in infants) but in the other patient encapsulated hematomas occurred in the diploë of the cranial bones. Cyst production in these diploic hematomas results from hemorrhagic effusion into the spongiosa and marrow from a diploic vascular channel. A reactive, proliferative process is stimulated if the extravasation organizes and remains unabsorbed. Granulation tissue containing giant cells is deposited and further serous effusion into the intramedullary space causes the formation of a cyst containing degenerated blood products. The diploic space, filled with fibrous tissue, spongy bone, serum, and patches of sclerotic bone, expands and causes atrophy of the surrounding skull tables.[4,5] These cysts differ from the recently described aneurysmal bone cysts of the skull in that they contain no cavernomatous blood-filled spaces or bone septums.[6,7]

Usually the cystic subperiosteal and diploic hematomas cause no clinical symptoms other than soft, bony swelling of the skull.

From Valley Forge Army Hospital, Phoenixville, Pa. Dr. Rosenbluth is now at the University of Illinois Medical Center, Chicago, Ill.

Severe pain was the presenting symptom in the case here reported.

The roentgenographic appearance of the cyst is one of increased radiance with sharply defined sclerotic edges, frequently near a suture line. The skull tables are ballooned and thinned with the swelling toward the outer aspect of the skull.

Chorobski and Davis[3] and Geschickter and Copeland[5] have treated these lesions by simple curettage with good results. It is believed, however, that complete excision of the cyst with a margin of normal bone is indicated because recurrence of the cyst has been observed after curettage. Block removal by craniectomy allows the surgeon to explore the subdural space at the time of operation and assures complete removal in event the lesion, at operation or after pathologic examination, proves to be other than benign. Cranioplasty can be done at the time of removal of the involved bone and the continuity of the skull restored in one operative procedure.

CASE REPORT

A 30-year-old housewife was admitted to this hospital on 11 May 1953 with the referral diagnosis of left-sided intractable trigeminal neuralgia. Fifteen years prior to admission she had fallen from a moving truck and had been admitted unconscious to a hospital near her home. Roentgenograms of the skull at that time had revealed a linear fracture extending from the left occipital bone to the left parietal bone. After several days of lethargy and headache, she recovered rapidly and, except for a nontender "lump" in the left parietal region, was asymptomatic.

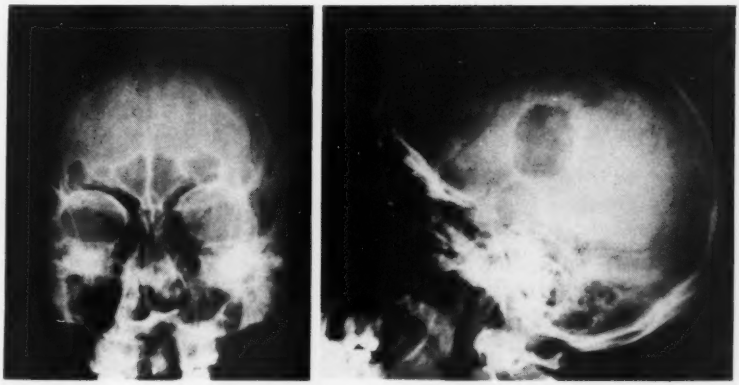

Figure 1. Cystic, osteolytic lesion in the left parietal bone with irregular, sclerotic edge.

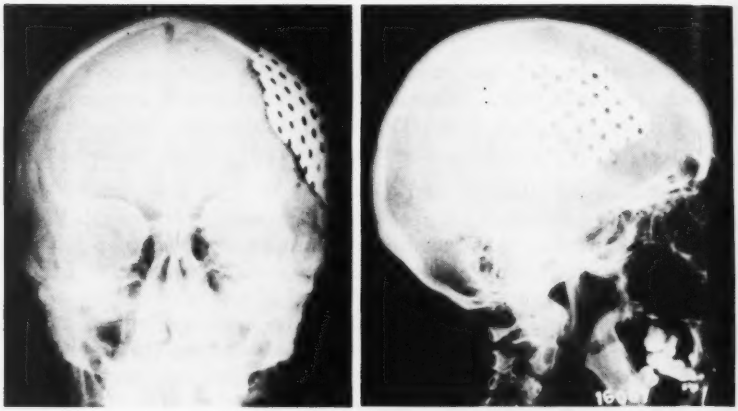

Figure 2. Roentgenograms taken nine days after operation show the perforated tantalum plate covering the skull defect.

Three months before this admission her scalp on the left side became exquisitely tender and a hemicranial headache radiating into the left maxilla and brow became so severe that she gained relief only by taking codeine every three hours. Several teeth in her left upper jaw were extracted without remission of the pain. Roentgenograms of the skull revealed an oval, osteolytic lesion

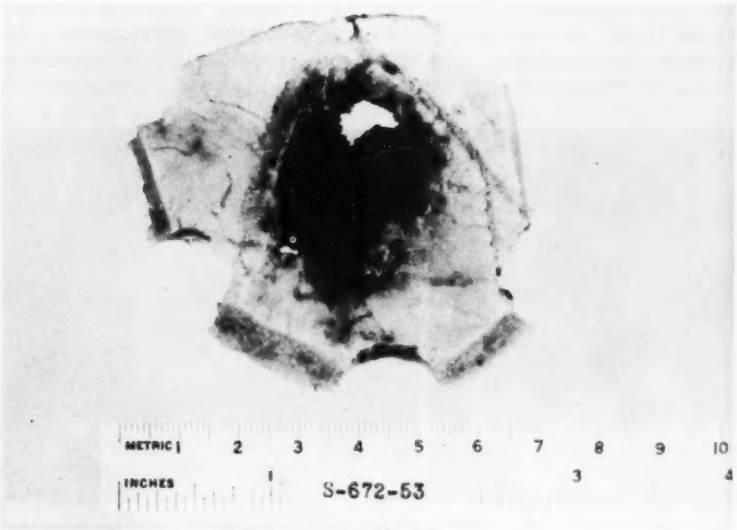

Figure 3. Inner surface of bone specimen illustrating perforations in both tables of skull and proximity of cyst to groove of middle meningeal artery.

in the left parietal bone measuring three centimeters in diameter (fig. 1). Both tables of the skull were thinned and expanded at the site of the lesion. The margin of the cyst was outlined by sclerotic bone. A survey of the long bones, chest, and pelvis, and laboratory tests were normal.

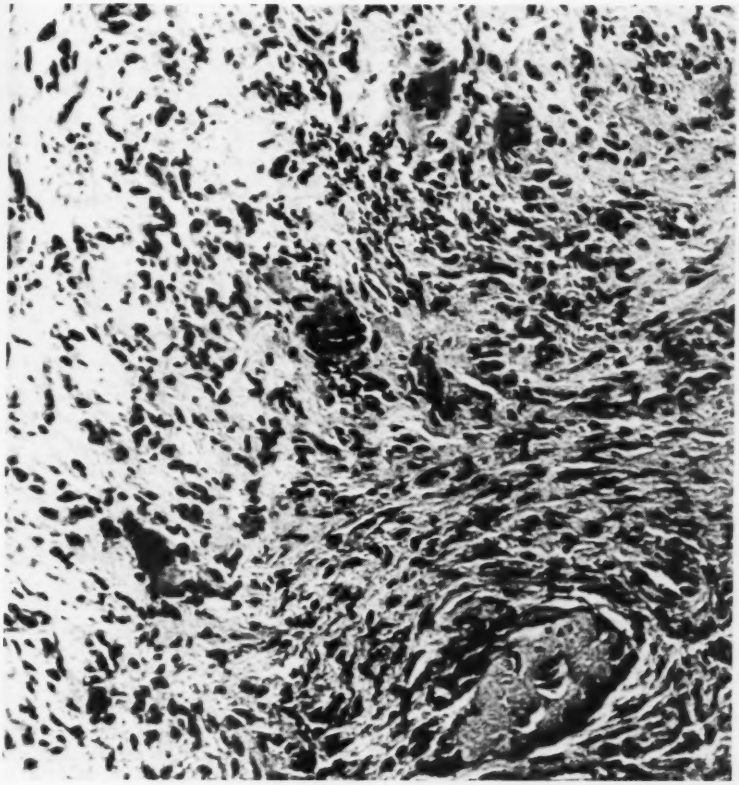

Figure 4. Photomicrograph of cyst wall showing giant cells, fibrous tissue, and trabeculated bone. (Hematoxylin-eosin stain, × 40)

The patient was apprehensive and guarded the left scalp by tilting her head to the left. The scalp mass was soft, cystic, about four centimeters in diameter, and nonpulsatile. There was no increase in vascularity of the left hemicranium or bruit over the mass. Visual acuity and visual fields were normal. On 19 May 1953 a left parietal craniectomy and tantalum cranioplasty were performed. There were perforations in both the inner and outer tables of the skull. The cyst was filled with clear, xanthochromic fluid and an adherent layer of granulation tissue

covered the intact dura. Because of a recent report of chronic subdural hematoma causing skull erosion,[5] the dura was opened. The leptomeninges and brain appeared normal. Roentgenograms taken after the operation show the perforated tantalum plate covering the skull defect (fig. 2). The patient was completely relieved of pain and was discharged 12 days after the operation.

PATHOLOGY REPORT

The tissue from both the dura and the bone cyst cavity, contained partially degenerating bone and areas of hemorrhage, and scattered throughout were fibroblasts and large prominent giant cells (fig. 3). In most areas there was only a small amount of stroma supporting the cells. The sections from the periphery of the cavity contained areas of trabeculated bone covered by a thin layer of moderately dense fibrous tissue which contained a few scattered giant cells (fig. 4). Overlying this fibrouslike tissue capsule was a blood clot.

A diagnosis of secondary bone destruction with osteoclastic activity, or a primary giant cell tumor of bone with hemorrhage, was considered. The paucity of the stromal elements and the fact that only a small amount of soft tissue was present ruled out a primary giant cell tumor. The lesion did not extend for any considerable distance into the soft parts covering the bone and, microscopically, there were no large blood lakes and definite large vessels as described in aneurysms of bone. Because of the gross appearance and the microscopic picture this lesion was considered an old diploic hematoma with bone erosion and giant cell reaction.

SUMMARY

Cysts of the skull may result from unabsorbed diploic hematomas following cranial trauma. An expansile, osteolytic lesion is produced which has a characteristic roentgenographic appearance. The cyst may be painful but rarely produces neurologic symptoms. Because recurrence may follow simple curettage, complete excision and cranioplasty is recommended in the treatment of these benign, posttraumatic bone cysts.

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Certificate of Appreciation Given Dr. Melvin A. Casberg

Dr. Melvin A. Casberg, right, former Assistant Secretary of Defense for Health and Medicine, is shown receiving a Defense Department Certificate of Appreciation recently from Secretary of Defense Charles E. Wilson in which he was cited for "distinguished public service." He is now in private practice in Solvang, Calif.

CONGENITAL MEGACOLON IN AN 18-YEAR-OLD YOUTH

PHILIP A. COX, *Major, USAF (MC)*
LEONARD D. HEATON, *Major General, MC, USA*

THOUGH the literature contains many reports of patients with congenital megacolon observed earlier than the first publication by Hirschsprung[1] in 1888,[2] his name is firmly associated with this condition. Many causative theories for this condition have been advanced, including pathologic changes in the dilated bowel, distal mechanical obstruction, and sympathetic imbalance. There is now agreement among most authorities, however, that the primary cause of congenital megacolon is a neurologic defect of the rectum and the lower sigmoid colon. The defect is an absence of the myenteric plexus (of Auerbach) in the rectum and/or lower sigmoid colon. Due to this congenital absence, peristalsis does not progress through the involved area, and over many months the distal colon becomes greatly dilated. This theory, previously advanced by Tiffin and associates,[3] Whitehouse and Kernohan,[4] Dalla Valle,[5] was confirmed by Swenson and his associates[6] in 1949, who recommended that treatment consist of the excision of the neurologically deficient rectum and lower sigmoid. Swenson[7–10] has since published his experiences and observations in which a "pull-through" technic is described. Briefly, he recommends that the constricted portion of the rectum, or rectosigmoid, be resected, along with a portion of the dilated bowel, by an abdominoperineal procedure in which the bowel to be removed is pulled through the distal segment and the anus. This procedure allows resection of the rectum down to the internal sphincter, which Swenson[11] believes to be necessary because often the ganglia are absent down to this point. The discrepancy in size of the proximal and distal segments is minimized by the pull-through method.

Congenital megacolon should be suspected in a history of severe constipation dating from birth, or immediately thereafter (in contrast to those cases of megacolon due to chronic constipation, either functional or mechanical), and persistent enlargement of the abdomen. Barium enema studies, done with

From Walter Reed Army Hospital, Washington, D. C.

caution, usually show narrowing of the rectosigmoid in contrast to the dilated upper sigmoid and descending colon. Patients in whom dilatation down to the anus exists do not benefit from surgery.

Preparation of the patient for operation is of great importance and includes a low-residue diet for several weeks, repeated enemas, and mineral oil daily. Preoperatively, an antibiotic bowel preparation is used. Because megalo-ureter is occasionally found associated with congenital megacolon, excretory urograms as well as other specialized genitourinary examinations should be made prior to surgery. The condition may exist in varying degrees of severity. Conservative treatment which includes diet, mineral oil, and enemas often suffices in mild cases. Drugs, such as methacholine chloride and other parasympathetic stimulants are of limited value. Sympathectomy is no longer used. Colostomy[12] may be necessary for severe, unrelieved constipation or for lavage when enemas have not been effective preoperatively.

CASE REPORT

The patient, an 18-year-old youth, complained of severe chronic constipation since birth. This patient had had no normal bowel movements since birth and for the first two years of life regular enemas and use of a long rectal tube were necessary. Up to six years of age, two to three high colonic irrigations were given him each week. At the age of six years he was operated on for acute intestinal obstruction due to volvulus of the dilated colon, at which time the volvulus was released. When he was 12 he had another episode of acute abdominal pain and distention which was relieved by conservative therapy. Following this it was necessary to give one high colonic irrigation daily. At 14 he found that 2 ounces of mineral oil daily along with daily irrigations resulted in adequate bowel movements. At this time he became aware of a gradual enlargement of his waistline, associated with severe shortness of breath on exertion, which prohibited his participation in school sports and proved a source of constant embarrassment. Considerable emotional upset was occasioned by his inability to dance and by a lack of normal association with girls.

The most significant factor in his past history was rheumatic fever at the age of 10, which kept him from school for a year. His weight on admission was 160 pounds which represented a loss of 25 pounds during the past year.

Physical findings on admission included blood pressure of 126/92; pulse, 84; and temperature, 99.8° F. He was well developed, well nourished, and in no acute distress. The most outstanding observations were the greatly distended abdomen and

wide flaring lower costal margin with a 180° angle at the midline. No abdominal masses were palpable. There was a well-healed lower left rectus scar. A cautiously given barium enema roentgenogram revealed an extremely dilated sigmoid colon, occupying the whole abdominal cavity, and a narrow constricted area in the rectosigmoid region.

Course in hospital. Preoperative preparation of the patient's bowel was begun two weeks prior to admission to the hospital on 10 August 1953. Then more intensive bowel preparation was

Figure 1. The greatly dilated sigmoid colon is grasped at the freed splenic flexure. The narrowed rectosigmoid area is at the right edge of the photograph.

begun, including cathartics, mineral oil, multiple enemas, low-residue diet, and the administration of neomycin-phthalylsulfathiazole (sulfathalidine) for 48 hours (total dose of 6 grams of neomycin and 9 grams of phthalylsulfathiazole). On 14 August 1953, using gas-oxygen-ether endotracheal anesthesia, the abdomen was opened through a long, left, paramedian incision. The dilated sigmoid was 12 inches in diameter at its largest point and filled all of the abdominal cavity visible through the long incision. In spite of the long preoperative bowel preparation, the colon was still full of air and feces, and it was necessary to irrigate through the anus by means of a large rectal tube

after which a solution of neomycin-phthalylsulfathiazole was instilled through the tube. It was then possible to retract the specimen out of the wound. At the junction of the sigmoid with the rectum, near the peritoneal reflection, the bowel was definitely and suddenly narrowed (fig. 1). The dilatation extended almost to the junction of the upper and middle thirds of the descending colon. The peritoneal reflection was incised and the entire left colon resected. A primary, two-layer, anastomosis was performed with no tension between the distal third of the transverse colon and the rectum. The dilated descending colon was not used for anastomosis because the bowel wall was greatly thickened and no peristalsis was present. (The pathologic report subsequently confirmed the presence of ganglia in the sites selected for anastomosis.) Postoperatively, Wangensteen gastric suction was continued for four days, and the fluid and electrolyte balance were maintained by the intravenous method. The patient had a bowel movement on the fifth postoperative day. He was kept on a soft diet until the tenth postoperative day, and on a low-residue diet for the following two weeks. After the seventh day he had daily, or twice-daily, bowel movements with no difficulty. The anterior abdominal wall was relaxed and thin, similar to that in the postpartum state. Physiotherapy and graded exercises were employed for several weeks to increase the strength and tone of the muscles.

Observed three months after the operation, the patient was having normal daily bowel movements without recourse to enemas, laxatives, or high colonic irrigations which had been used for 18 years. The previously straight costal angle had assumed its normal position. He returned to college and was able to participate in normal social functions for the first time.

COMMENT

A pull-through operation was not done in this case because of the discrepancy in size between the dilated sigmoid and the narrowed rectum, and because of the marked thickening of the bowel wall. The anastomosis was performed low on the rectum where subsequent pathologic examination revealed the presence of normal ganglia. The entire left colon was resected and the distal third of the transverse colon used for the anastomosis. The postoperative course was uneventful.

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Medical Officers Elected to American College of Physicians

At a recent meeting of the Board of Regents of the American College of Physicians the following regular Medical Corps officers were elected to membership as fellows and associate fellows:

Fellows

Lt. Col. Frank L. Bauer, USA
Col. Albert A. Biederman, USA
Col. Edward A. Cleve, USA
Lt. Col. James A. Orbison, USA
Col. Benjamin A. Strickland, Jr., USAF
Lt. Col. William M. Webb, USA

Associate Fellows

Comdr. John W. Albrittain, USN
Capt. Frank H. Austin, USA
Lt. Col. William S. Bagnall, USA
Capt. James C. Bell, USA
Col. Wilbur C. Berry, USA
Comdr. Robert O. Canada, Jr., USN
Lt. David B. Carmichael, Jr., USN
Lt. Col. Charles S. Christianson, USA
Maj. David L. Deutsch, USA
Lt. Col. Carl N. Ekman, USA
Lt. Col. James H. Hammond, USAF
Lt. Col. Robert C. Hunter, Jr., USA
Lt. Col. Robert S. Jordan, Jr., USA
Col. Joseph H. McNinch, USA
Col. Charles K. Morris, USAF
Lt. Col. William N. Piper, Jr., USA
Capt. Glenn H. Richmond, USA
Maj. John A. Sheedy, USA
Maj. William H. Westbrook, USAF

PROCAINE HYDROCHLORIDE ALLERGY IN REGIONAL ANESTHESIA

JAMES E. CHIPPS, *Lieutenant Colonel, DC, USA*
EDWARD ZUCKER, *D. D. S., M. D.*

PROCAINE hydrochloride has low toxicity as an anesthetic agent and few reports of undesirable reactions to it, such as idiosyncrasy, allergy, or toxic responses to an overdosage, can be found in the literature. In routine dental procedures, the toxic dose is not remotely approached even if the entire dose is inadvertently given intravenously and this reaction is of little practical import. Generalized reactions in persons sensitive to this drug have been described.[1] Fortunately, such a reaction is rare as it cannot be anticipated and little can be done to prevent it. All dentists are familiar with the hypersensitivity to procaine manifested by contact dermatitis of the hands. Little has been reported, however, of allergies to the drug when injected. Rickles[2] cited most of the reports and described a probable procaine allergy in 10 patients at about the time we were observing the following case.

CASE REPORT

A 23-year-old man was referred to the dental clinic of this hospital with a diagnosis of "cellulitis of the face." The upper left third molar had been extracted five days previously under local procaine hydrochloride anesthesia. Swelling of the face began the same evening. On the following morning his face and palate were so enlarged that he returned to the dentist. He was given aureomycin for two days with only questionable improvement. Two days before admission he was given a total of 900,000 units of penicillin in three intramuscular doses. On the day before admission the edema of the face increased and he was then referred for hospitalization.

Past history disclosed an allergic reaction to sulfonamides, characterized by fine rash and itching. He had received several injections of penicillin previously without any reaction. There

From Tokyo Army Hospital. Col. Chipps is now at Madigan Army Hospital, Tacoma, Wash.

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was no history of hay fever, asthma, or allergy to foods. His sister had hives-like reactions to tomatoes.

On admission to this hospital, the patient had marked swelling, without redness or tenderness, of the orbital and infraorbital areas of the left side of his face. A fine macular rash was present over the chest and abdomen. His temperature, pulse, and respirations were normal. The site of the recent tooth extraction was healing satisfactorily but moderate edema of the palate and a carious pulp exposure of the upper right first molar were present. He was given 100 mg. of tripelennamine hydrochloride (pyribenzamine) three times daily, and during the next three days he improved considerably.

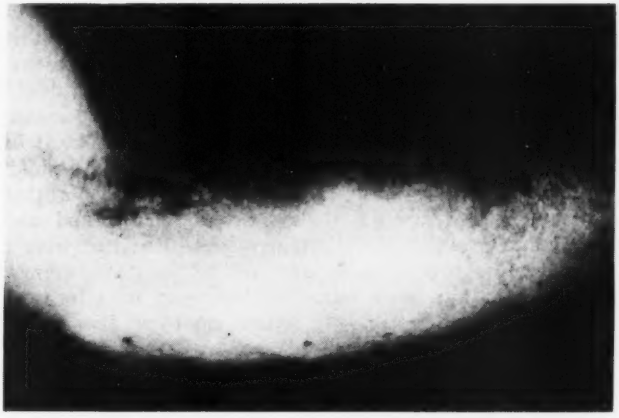

Figure 1. Erythematous reaction from 1 percent procaine.

Four days after admission the carious right molar was extracted under 2-percent procaine anesthesia. The operation was uneventful but, on the following day, the right side of his face was markedly swollen and the palate was edematous. The tooth socket contained a normal clot without evidence of infection and the patient had no pain. A white blood cell count revealed 13,700 leukocytes, with 54 percent neutrophils, 36 percent lymphocytes, 2 percent monocytes, and 8 percent eosinophils. Because an allergic reaction to procaine was suspected, antihistamine therapy was again employed and the swelling subsided in a few days.

After a period of 48 hours without medication a skin test for procaine hypersensitivity was made on the left forearm with 1 percent procaine. Seven hours later the entire arm began to itch and the wheals exhibited a severe four-plus reaction (fig. 1). The patient again was given tripelennamine hydrochloride therapy. Regression of the local symptoms began but the following day he

neglected to take the drug and a severe systemic allergic reaction occurred. It was characterized by generalized urticaria with itching, marked circumorbital (fig. 2) and palatal angioneurotic edema, and a fever of 100.4° F. The leukocyte count at this time was 9,800 with 11 percent eosinophils.

Figure 2. Recurrence of edema of the circumorbital areas and the right cheek.

The patient was given 50 mg. of diphenhydramine hydrochloride (benadryl), 24 mg. of ephedrine, and 16 mg. of phenobarbital every four hours. Calamine lotion was used locally over the areas of itching. The reaction gradually subsided and in three days he was well.

DISCUSSION

Local allergic reactions followed procaine injections on three occasions in this patient and in each instance he responded well to routine antiallergic management. One reaction was precipitated by an intracutaneous skin test, confirming the diagnosis of procaine allergy. Certain features in this case, together with recent reports,[2,3] indicate that procaine allergy is not as rare as believed. Our patient was admitted because of local swelling, thought to be the result of cellulitis. Dentists are familiar with certain benign postoperative swellings which do not appear inflammatory or hemorrhagic. The term "traumatic edema" is usually employed for such a condition. In each of the three allergic episodes, local edema was prominent and on one occasion there

were no other manifestations at all. Apparently procaine allergy may occur as a local phenomenon and must be distinguished from a hematoma, postextraction traumatic edema, cellulitis, or other common postoperative complications. Silverman,[3] in a preliminary report of an extensive project relative to the prophylactic use of antihistamine drugs in oral surgery, found that there was a markedly diminished rate of postoperative swellings when they were used. He was not concerned with procaine injections in his series, but stated that the phenomenon of postoperative swelling may sometimes be on a localized hypersensitivity basis.

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Management of Anemias

The successful treatment of anemia depends on appreciation of the significance of anemia and the circumstances under which it may develop, as well as on accurate differential diagnosis. In considering the claims for various proposed therapeutic agents the physician should note the differences as well as the relation of experimental studies and clinical practice. In the case of many essential substances, whether vitamins or minerals, human requirements are so low that deficiency is very unlikely or never occurs. In the case of other nutrients, special conditions must exist before deficiency will develop. Storage of essential substances is an important safety factor, while synthesis by bacteria growing in the bowel is an occult source of certain vitamins.

The "shotgun" type of hematinic is the modern counterpart of the patent medicine of yesterday. There is no short cut to the treatment of anemia. Nevertheless, the application of the advances made in the last few decades is simple and depends on an ounce of knowledge, an equal amount of understanding, and a pound of thoroughness.

—MAXWELL M. WINTROBE
in *Bulletin of the New York Academy of Medicine,*
p. 25, Jan. 1954

BILATERAL HYPERTROPHY OF THE MASSETER MUSCLES

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WALTER E. SWITZER, *Captain, MC, USA*

Of the few cases of masseter muscle hypertrophy in the literature, Legg (1880) appears to have recorded the first. His patient, age 10 years, demonstrated bilateral involvement and an associated hypertrophy of the temporal muscles. Hersh[1] reported observation of hypertrophy of the masseter during routine examinations of troops for communicable diseases. Maxwell and Waggoner[2] reported the condition as a clinical entity. Tempest[3] reported unilateral hypertrophy and suggested surgical correction. Only two surgical methods of treatment have been reported. In 1947, Gurney[4] altered the condition observed in a patient by excising muscle of the outer surface of the masseter. Cosmesis was his indication for operation. A comparative procedure was reported by Adams[5] in 1949. His technic differed from the Gurney method by confining the muscle resection to the medial area. It is this latter procedure that has been used on the patient presented in this article.

CASE REPORT

A 20-year-old soldier was referred to this hospital on 13 February 1953 for treatment of bilateral enlarged masses located in the region of the mandibular angles (figs. 1A and 1B). The patient had observed a swelling in this location for eight months. In March 1952 he developed a small, painful tumor mass behind the mandible and below the ear on both sides of his face. These enlarged gradually until it was thought that he might have mumps. The swelling gradually subsided only to recur again in June 1952. There was no contributory familial history.

The only positive findings were bilateral enlargement of what appeared to be soft tissue masses located at the angle of the mandible and rigidity in these areas when the patient clenched his teeth, chewed gum, or ate. There was no associated adenopathy. Laboratory study findings were normal. A diagnosis

From Brooke Army Hospital, Fort Sam Houston, Tex.

of bilateral hypertrophy of masseter muscles was confirmed by the oral surgical section of the dental service.

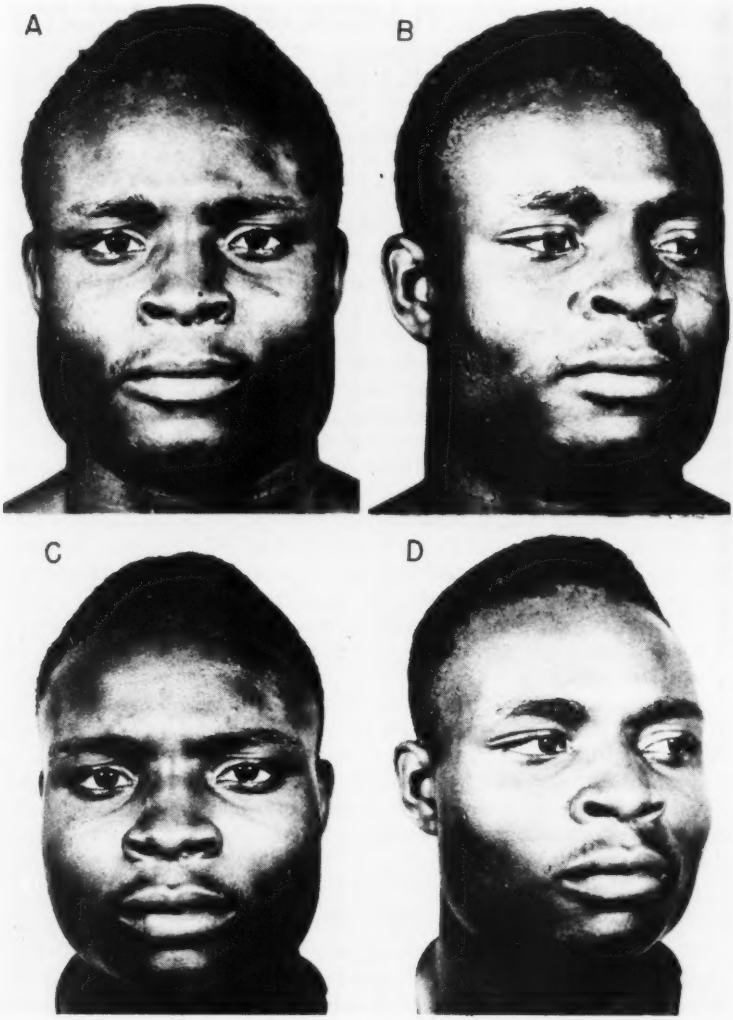

Figure 1. (A) *and* (B) *Preoperative facial appearance. Note transverse width of lower jaw and face.* (C) *and* (D) *Postoperative appearance showing comparative reduction in width of lower one third of the face. Note alterations of lip contours.*

The surgical technic used in this patient was as follows: Bilateral incisions were made in the shadow areas along the

lower border of the mandible in the angle position. These were carried down to the periosteum. The masseter was elevated by dissection. The incisions were continued upward involving about two thirds of the muscle attachment. The lower medial portion was then excised (fig. 2A). An incision was then made into the periosteum allowing it to be elevated from the bone over the splayed angle portions. The Luc saw was used to resect the

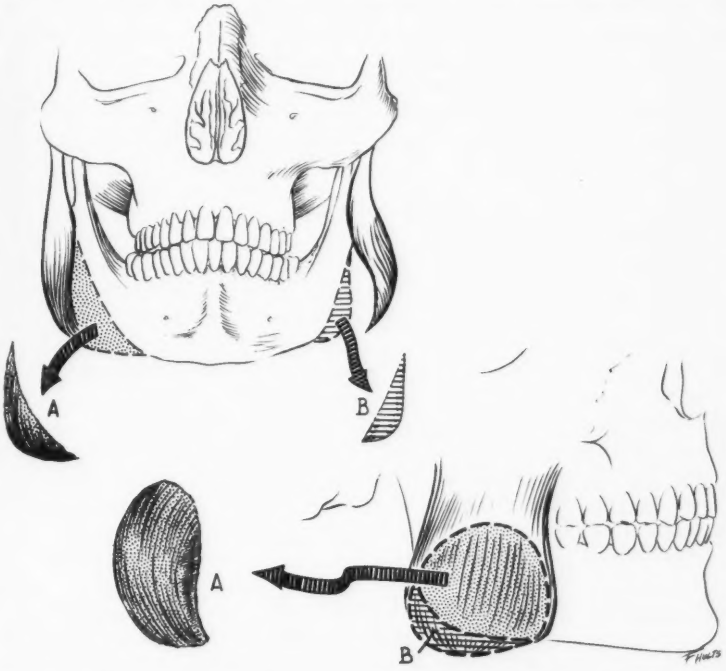

Figure 2. Diagrammatical representations of areas resected for narrowing the lower one third of the face. (A) *Portion of masseter excised.* (B) *Portion of mandible excised.*

excess bone (fig. 2B). The remaining sharp edges of bone were rounded with a rasp. The periosteum was then sutured in place. The muscle was approximated and the subcutaneous tissues closed with fine catgut. Black silk was used for skin closure. A head-and-chin type Barton bandage was fixed in place and left in position for four weeks. The patient achieved full range of jaw motion by the sixth postoperative week (figs. 1C and 1D). He had no complications. Microscopic studies of the resected material showed normal muscle and normal bone tissue.

DISCUSSION

It is suggested that the condition described in this article may be more common than the literature would indicate. The cosmetic indication for operation might seem of prime importance, especially in female patients. In the case reported, the patient had a complete personality change following his surgical reconstruction. His recalcitrant personality was replaced almost immediately by one of complete co-operation and appreciation. During his convalescence he served as an assistant corpsman on the plastic service. His work was carried out with efficiency and understanding. He returned to duty still continuing in this marked change. It is not our purpose to advocate facial alterations as a cure for maladjustments but in this one exceptional situation, it appeared to be of benefit.

The cause of masseter muscle hypertrophy in the patients reported is unknown. It has been suggested that the nervous habit of grinding the teeth or the habitual clenching of the jaws might be a factor; however, easy fatigue of jaw muscles without an associated hypertrophy in other muscles of mastication has been observed in such patients. Masseter hypertrophy also may be present with or without an associated flaring of the mandibular angles. Specific reference is made to the absence of malocclusion, temporomandibular joint derangements, muscle hernia, and conclusive neurologic or electromyographic findings. Histologic examination of muscle sections from a few patients using special stains showed some of the muscle fibers to be larger than others and to have few, if any, striations.[2]

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Partial gastrectomy is the operation of choice if at emergency laparotomy for hematemesis or melena no causal lesion * * * is found in a patient aged more than 50.

— GORDON FERGUSON, M. D.
in *Lancet*, p. 754, Oct. 10, 1953

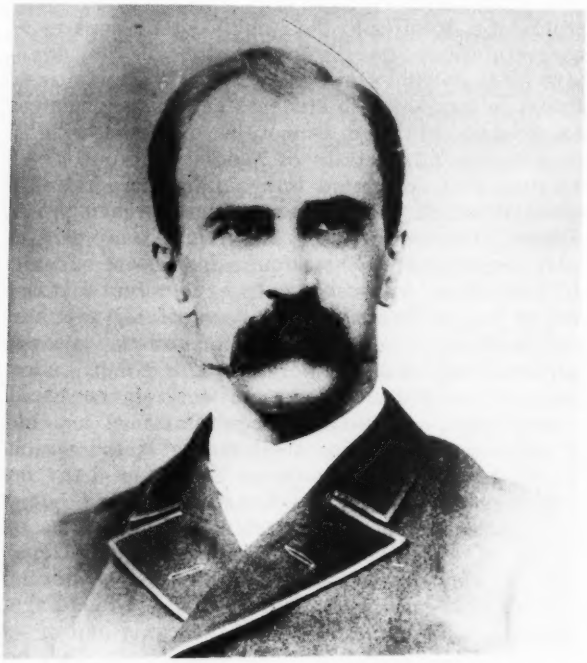
THE ARMY SURGEON

SIR WILLIAM OSLER, *M. D., F. R. S.*

AT the outset I am sure you will permit me, on behalf of the profession, to offer to the Army Medical Department hearty congratulations on the completion of the arrangements which have made possible this gathering. With capacities strained to the utmost in furnishing to students an ordinary medical education, the schools at large cannot be expected to equip army surgeons with the full details of special training. A glance at the curriculum just completed brings into sharp relief the disabilities under which previous classes must have proceeded to their labours, the members of which have had to pick up at random—in many cases have probably never acquired—the valuable knowledge traversed in the lectures and laboratory exercises of the session. But greatest of all the advantages of an army medical school must be counted the contact of the young officers with their seniors, with the men under whose directions they subsequently have to work. In comparison with their predecessors, with what different feelings and ideas will the men before us enter upon their duties in the various posts to which they have been assigned. Instead of hazy notions—perhaps to one fresh from the Examining Board not pleasant ones—of a central authority at Washington, of a Yama enthroned as Secretary of War, and of an exacting Surgeon-General, the young officer who has enjoyed the delightful opportunities of four months' study amid these inspiring surroundings, which teem with reminders of the glories of the corps and of the greatness of his profession, the young officer, I say, must be indeed a muddy-mettled fellow who does not carry away, not alone rich stores of information, but, most precious of all educational gifts, a true ideal of what his life-work should be.

Sixty years have not dimmed the significance of this address which was presented on 28 February 1894 before the first graduation class of the Army Medical School. Osler came to Washington on the invitation of Surgeon General Sternberg whom he had known in Baltimore when the Army officer was working as a graduate student in Welch's laboratory. He was 44 and had published his *Practice of Medicine* two years previously. The medical school at Johns Hopkins University, where he was fondly known as "The Chief," was in its first academic year with an enrollment of 18 students. Major Walter Reed, the first director of the Pathology Laboratory of the Army Medical School, was probably in the group to whom Osler spoke. The photographs are from the Armed Forces Medical Library collection—*Editor.*

Members of the Graduating Class: Though to you it may not, to me it seems peculiarly appropriate that the Surgeon-General should have asked a civilian to make an address on this occasion. With the strictly military aspects of your future life you have made yourselves familiar; of the merits and demerits of the army as a career for a physician you have in the past four months heard very much; but about all subjects there are some



Osler at age 37. This photograph was taken in Philadelphia about two years after he left McGill University in 1886 to accept the chair of clinical medicine at the University of Pennsylvania.

questions which are more freely handled by one who is unhampered by too particular knowledge, and this is my position, I may say my advantage, to-day. For me the Army Medical Department, so far as particulars are concerned, means a library with unsurpassed facilities, the worth of which is doubled by the liberality of its management; a museum in which I have spent some delightful hours; an index-catalogue, which is at my elbow like a dictionary; and the medical history of the late war, particularly the volumes by Woodward and Smart. Further, in my general reading in the history of the profession of this country,

I have here and there gleaned facts about the corps and its members. I have read the spirited vindication of John Morgan, who may be called the first Surgeon-General, and I am familiar with the names and works of many of your distinguished predecessors who have left their mark in our literature.

But as I write an aspiration of the past occurs, bringing me, it seems, closer to you than any of the points just mentioned, a recollection of the days when the desire of my life was to enter the India Medical Service, a dream of youth, dim now and almost forgotten—a dream of "Vishnu land, what Avatar!"

Speaking, then, from the vantage ground of my ignorance, let me tell you briefly of the opportunities of the life you have chosen. First among your privileges I shall place a feature often spoken of as a hardship, viz., the frequent change from station to station. Permanence of residence, good undoubtedly for the pocket, is not always best for wide mental vision in the physician. You are modern representatives of a professional age long past, of a day when physicians of distinction had no settled homes. You are Cyprid larvae, unattached, free-swimming, seeing much in many places; not fixed, as we barnacles of civil life, head downward, degenerate descendants of the old professional Cirripeds, who laid under contribution not one, but a score of cities.

Without local ties, independent of the public, in, while not exactly of, our ranks, you will escape many of the anxieties which fret the young physician—the pangs of disprized worth, the years of weary waiting, the uncertainty of the effort; and perhaps those sorer trials inevitable in an art engaging equally heart and head, in which, from the very nature of the occupation, the former is apt—in finer spirits—to be touched with a grievous sensibility. In change, that leaven of life denied to so many, you will find a strong corrective to some of the most unpleasant of the foibles which beset us. Self-satisfaction, a frame of mind widely diffused, is manifest often in greatest intensity where it should be least encouraged, and in individuals and communities is sometimes so active on such slender grounds that the condition is comparable to the delusions of grandeur in the insane. In a nomad life this common infirmity, to the entertainment of which the twin sisters, Use and Wont, lend their ever-ready aid, will scarcely touch you, and for this mercy give thanks; and while you must, as men, entertain many idols of the tribe, you may at least escape this idol of the cave. Enjoying the privilege of wide acquaintance with men of very varied capabilities and training, you can, as spectators of their many crotchets and of their little weaknesses, avoid placing an undue estimate on

your own individual powers and position. As Sir Thomas Browne says, it is the "nimbler and conceited heads that never looked a degree beyond their nests that tower and plume themselves on light attainments," but "heads of capacity and such as are not full with a handful or easy measure of knowledge think they know nothing till they know all!"

Per contra, in thus attaining a broader mental platform, you may miss one of the great prizes of the profession—a position in a community reached in length of days by one or two, who, having added to learning, culture, to wisdom, charity, pass the evening of their lives in the hearts of their colleagues and of their kind. No gift of Apollo, not the Surgeon-Generalship, not distinguished position in science, no professorship, however honoured, can equal this, this which, as wandering Army Surgeons, you must forego. Fortunate is it for you that the service in one place is never long enough to let the roots strike so deeply as to make the process of transplantation too painful. Myself a peripatetic, I know what it is to bear the scars of partings from comrades and friends, scars which sometimes ache as the memories recur of the days which have flown and of the old familiar faces which have gone.

Another aspect of the life of the Army Surgeon, isolation in some degree from professional colleagues, will influence you in different ways—hurtfully in the more dependent natures, helpfully in those who may have learned that "not from without us, only from within comes, or can ever come, upon us light" —and to such the early years of separation from medical societies and gatherings will prove a useful seed-time for habits of study, and for the cultivation of the self-reliance that forms so important an element in the outfit of the practitioner. And, after all, the isolation is neither so enduring nor so corroding as might have fallen to your lot in the routine of country practice. In it may be retained, too, some measure of individuality, lost with astonishing rapidity in the city mills that rub our angles down and soon stamp us all alike. In the history of the profession there are grounds for the statement that isolation promotes originality. Some of the most brilliant work has been done by men in extremely limited spheres of action, and during the past hundred years it is surprising how many of the notable achievements have been made by physicians dwelling far from educational centres—Jenner worked out his discovery in a village; McDowell, Long, and Sims were country doctors; Koch was a district physician.

So much depends upon the sort of start that a man makes in his profession that I cannot refrain from congratulating you again on the opportunities enjoyed during the past four months, which

have not only added enormously to your capabilities for work, but have familiarized you with life at the heart of the organization of which hereafter you will form part, and doubtless have given you fruitful ideas on the possibilities of your individual development. Naturally each one of you will desire to make the best use of his talents and education, and let me sketch briefly what I think should be your plan of action.

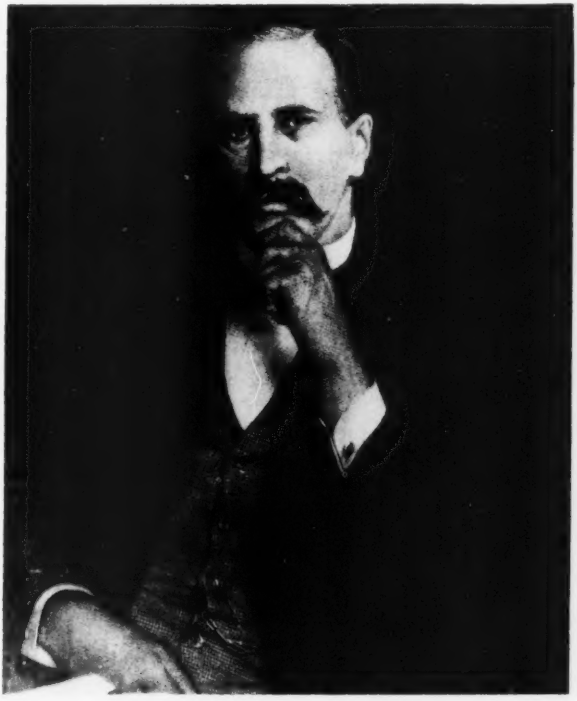
Throw away, in the first place, all ambition beyond that of doing the day's work well. The travellers on the road to success live in the present, heedless of taking thought for the morrow, having been able at some time, and in some form or other, to receive into their heart of hearts this maxim of the Sage of Chelsea: Your business is "not to *see* what lies dimly at a distance, but to *do* what lies clearly at hand." Fevered haste is not encouraged in military circles, and if you can adapt your intellectual progress to army rules, making each step in your mental promotion the lawful successor of some other, you will acquire little by little those staying powers without which no man is of much value in the ranks. Your opportunities for study will cover at first a wide field in medicine and surgery, and this diffuseness in your work may be your salvation. In the next five or ten years note with accuracy and care everything that comes within your professional ken. There are, in truth, no specialties in medicine, since to know fully many of the most important diseases a man must be familiar with their manifestations in many organs. Let nothing slip by you; the ordinary humdrum cases of the morning routine may have been accurately described and pictured, but study each one separately as though it were new—so it is so far as your special experience goes; and if the spirit of the student is in you the lesson will be there. Look at the cases not from the standpoint of text-books and monographs, but as so many stepping-stones in the progress of your individual development in the art. This will save you from the pitiable mental attitude of the men who travel the road of practice from Dan to Beersheba, and at every step cry out upon its desolation, its dreariness, and its monotony. With Laurence Sterne, we can afford to pity such, since they know not that the barrenness of which they complain is within themselves, a result of a lack of appreciation of the meaning and method of work.

In the early years of service your advantages will be fully as great as if you had remained in civil life. Faithfulness in the day of small things will insensibly widen your powers, correct your faculties, and, in moments of despondency, comfort may be derived from a knowledge that some of the best work of the profession has come from men whose clinical field was limited but well-tilled. The important thing is to make the lesson of

each case tell on your education. The value of experience is not in seeing much, but in seeing wisely. Experience in the true sense of the term does not come to all with years, or with increasing opportunities. Growth in the acquisition of facts is not necessarily associated with development. Many grow through life mentally as the crystal, by simple accretion, and at fifty possess, to vary the figure, the unicellular mental blastoderm with which they started. The growth which is organic and enduring, is totally different, marked by changes of an unmistakable character. The observations are made with accuracy and care, no pains are spared, nothing is thought a trouble in the investigation of a problem. The facts are looked at in connexion with similar ones, their relation to others is studied, and the experience of the recorder is compared with that of others who have worked upon the question. Insensibly, year by year, a man finds that there has been in his mental protoplasm not only growth by assimilation but an actual development, bringing fuller powers of observation, additional capabilities of mental nutrition, and that increased breadth of view which is of the very essence of wisdom.

As clinical observers, we study the experiments which Nature makes upon our fellow-creatures. These experiments, however, in striking contrast to those of the laboratory, lack exactness, possessing as they do a variability at once a despair and a delight—the despair of those who look for nothing but fixed laws in an art which is still deep in the sloughs of Empiricism; the delight of those who find in it an expression of a universal law transcending, even scorning, the petty accuracy of test-tube and balance, the law that in man "the measure of all things," mutability, variability, mobility, are the very marrow of his being. The *clientèle* in which you work has, however, more stability, a less extended range of variation than that with which we deal in civil life. In a body of carefully selected active young men, you have a material for study in which the oscillations are less striking, and in which the results of the experiments, i. e., the diseases, have a greater uniformity than in infancy and old age, in the enfeebled and debauched. This adds a value to the studies of army medical officers, who often have made investigations in hygiene, dietetics, and medicine, so trustworthy and thorough that they serve us as a standard of comparison, as a sort of *abscissa* or base-line. Thus you have demonstrated to us, and to the community at large, the possibilities of stamping out smallpox by systematic revaccination; in civil practice we strive to reach the low rate of mortality of army hospitals in the treatment of typhoid fever and of pneumonia. Many of the most important facts relating to etiology and symptomatology have come from camp or barrack. I often think

that army surgeons scarcely appreciate that in their work they may follow the natural history of a disease under the most favourable circumstances; the experiments are more ideal, the conditions less disturbing than those which prevail either in family practice or in the routine of the general hospital. Many of the common disorders can be tracked from inception to close, as can be done in no other line of medical work, and the facilities for the continuous study of certain affections are unequalled.



Osler in Baltimore about 1905, shortly after he had decided to leave Johns Hopkins University to become Regius Professor of Medicine at Oxford.

This, which is a point to be appreciated in the intrinsic education of which I spoke, gives you a decided advantage over your less favoured brethren.

Your extraordinary range of observation, from the Florida Keys to Montana, from Maine to Southern California, affords unequalled facilities for the study of many of the vexed problems in medicine—facilities, indeed, which in the diversity of morbid conditions to be studied are equalled in no position in civil life.

Let me here mention a few of the subjects that may profitably engage your attention. No question is of more importance at present than the settlement, definitely, of the varieties of fever in the West and South. The studies of Baumgarten in St. Louis, and of Guiteras and others in the Southern States, suggest the possibility that in addition to typhoid fever and malaria—the common affections—there are other fevers the symptomatology and morbid anatomy of which still require careful elucidation. In this you will be walking in the footsteps of notable predecessors in the corps, and in the exhaustive works of Woodward and Smart, to which I have already alluded, and which are always available, you will find a basis from which you may start your personal observations. More particularly in this direction do we need careful anatomical investigation, since the symptomatology of certain of the affections in question has much in common with that of the ordinary continued fevers of the North. I may call your attention to the satisfactory settlement of the nature of mountain fever by army surgeons, and need hardly add that the specimens contributed by Hoff and by Girard to this museum demonstrate conclusively that it is in reality typhoid fever.

In the Southern posts malaria with its protean manifestations presents still many interesting problems for solution, and you will leave this school better equipped than any of your predecessors for the study and differentiation of its less known varieties. With positive knowledge as to the etiology, and a practical familiarity with methods of blood-examination, you can do much in many localities to give to malaria a more definite position than it at present occupies in the profession, and can offer in doubtful cases the positive and satisfactory test of the microscope. The haematuria of the South requires to be studied anew—the filarial cases separated from the malarial, and, most important of all, the relation of quinine to haematuria positively settled.

In the more distant posts, where, so far as the soldier is concerned, your opportunities for study may be limited, you may add greatly to our knowledge of the disorders prevalent among the Indians. More particularly do we need additional information as to the frequency of tuberculosis among them, and its clinical history. One of your number, Dr. Edwards, has already furnished admirable statistics upon this point, but the field is still open, and much remains to be done. In this connexion, too, you may be able to carry saving knowledge upon the etiology of the disease, and enforce regulations for its prevention. You have only to turn to the Index-catalogue to see how scanty in reality are the facts in the nosology of the North American Indian.

At many posts there will be presented to you the interesting effects of altitude, with problems of the greatest physiological importance. An excellent piece of work may be done upon its influences upon the red blood-corpuscles, in determining whether, as has been maintained, there is an increase numerically per cubic millimetre, so long as the individual remains in the more rarefied atmosphere. Points remain to be settled also upon the effects of altitude upon the chest-capacity, the chest-measure-

Osler at his home at No. 13 Norhams Gardens, Oxford, England, on 20 July 1919, five months before his death, with Dr. Walter L. Bierring, left, who later became president of the American Medical Association and is now chairman of the American Board of Preventive Medicine, and the late Colonel Louis Anatole LaGarde, MC, USA, a pioneer in surgery of gunshot wounds.

ment, and the heart, and our knowledge is still lacking on questions relating to the influence of high altitudes upon many of the ordinary diseases.

To one of you, perhaps, another peculiarly American disease —milk-sickness—may reveal its secret. Our knowledge of its etiology has not been materially increased since the early papers on the subject, which so well described its symptomatology.

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These are but a few of the questions suggesting themselves to my mind, to which, as chance affords, you could direct your attention. In a ten or fifteen years' service, travelling with seeing eyes and hearing ears, and carefully-kept note-books, just think what a store-house of clinical material may be at the command of any one of you—material not only valuable in itself to the profession, but of infinite value to you personally in its acquisition, rendering you painstaking and accurate, and giving you, year by year, an increasing experience of the sort to which I have already more than once referred.

In what I have said hitherto I have dwelt chiefly on your personal development, and on the direction in which your activities might be engaged, but while you are thus laying the foundation of an education in all that relates to the technical side of the profession, there are other duties which call for a word or two. In the communities to which you may be sent do not forget that, though army officers, you owe allegiance to an honourable profession, to the members of which you are linked by ties of a most binding character. In situations in which the advantages of a more critical training give you a measure of superiority over your *confreres* in civil life, let it not be apparent in your demeanour, but so order yourselves that in all things you may appear to receive, not to grant favours. There are regions, *in partibus infidelium,* to which you will go as missionaries, carrying the gospel of loyalty to truth in the science and in the art of medicine, and your lives of devotion may prove to many a stimulating example. You cannot afford to stand aloof from your professional colleagues in any place. Join their associations, mingle in their meetings, giving of the best of your talents, gathering here, scattering there; but everywhere showing that you are at all times faithful students, as willing to teach as to be taught. Shun as most pernicious that frame of mind, too often, I fear, seen in physicians, which assumes an air of superiority and limits as worthy of your communion only those with satisfactory collegiate or sartorial credentials. The passports of your fellowship should be honesty of purpose, and a devotion to the highest interests of our profession, and these you will find widely diffused, sometimes apparent only when you get beneath the crust of a rough exterior.

If I have laid stress upon the more strictly professional aspects of your career it has been with a purpose. I believe the arrangements in the department are such that, with habits of ordinary diligence, each one of you may attain not only a high grade of personal development, but may become an important contributor in the advancement of our art. I have said nothing of the pursuit of the sciences cognate to medicine, of botany, zoology, geology, ethnology and archaeology. In every one of

these, so fascinating in themselves, it is true that army medical officers have risen to distinction, but I claim that your first duty is to medicine, which should have your best services and your loyal devotion. Not, too, in the perfunctory discharge of the daily routine, but in zealous endeavour to keep pace with, and to aid in, the progress of knowledge. In this way you will best serve the department, the profession, and the public.

Generalities, of the kind in which I have been indulging, though appropriate to the occasion, are close kin, I fear, to the fancies fond, that vanish like the gay motes which float for a moment in the sunbeams of our mind. But I would fain leave with you, in closing, something of a more enduring kind—a picture that for me has always had a singular attraction, the picture of a man who, amid circumstances the most unfavourable, saw his opportunity and was quick to "grasp the skirts of happy chance." Far away in the northern wilds, where the waters of Lake Michigan and Lake Huron unite, stands the fort of Michilimackinac, rich in memories of Indian and *voyageur,* one of the four important posts on the upper lakes in the days when the Rose and the Fleur-de-lis strove for the mastery of the Western world. Here was the scene of Marquette's mission, and here beneath the chapel of St. Ignace they laid his bones to rest. Here the intrepid La Salle, the brave Tonty, and the resolute Du Lhut had halted in their wild wanderings. Its palisades and bastions had echoed the war-whoops of Ojibwas and Ottawas, of Hurons and Iroquois, and had been the scene of bloody massacres and of hard-fought fights. At the conclusion of the war of 1812, after two centuries of struggle, peace settled at last upon the old fort, and early in her reign celebrated one of the most famous of her minor victories, one which carried the high-sounding name of Michilimackinac far and wide, and into circles where Marquette, Du Lhut and La Salle were unknown. Here, in 1820, was assigned to duty at the fort, which had been continued in use to keep the Indians in check, Surgeon William Beaumont, then a young man in the prime of life. On June 22, 1822, the accidental discharge of a musket made St. Martin, a *voyageur,* one of the most famous subjects in the history of physiology, for the wound laid open his stomach, and he recovered with a permanent gastric fistula of an exceptionally favourable kind. Beaumont was not slow to see the extraordinary possibilities that were before him. Early in the second decade of the century the process of gastric digestion was believed to be due to direct mechanical maceration or to the action of a vital principle, and though the idea of a solvent juice had long been entertained, the whole question was *sub judice*. The series of studies made by Beaumont on St. Martin settled for ever the existence of a solvent fluid capable of acting on food outside as well as within the

body, and in addition enriched our knowledge of the processes of digestion by new observations on the movements of the stomach, the temperature of the interior of the body, and the digestibility of the various articles of food. The results of his work were published in 1833, in an octavo volume of less than 300 pages.* In looking through it one cannot but recognize that it is the source of a very large part of the current statements about digestion; but apart altogether from the value of the facts, there are qualities about the work which make it a model of its kind, and on every page is revealed the character of the man. From the first experiment, dated August 1, 1825, to the last, dated November 1, 1833, the observations are made with accuracy and care, and noted in plain, terse language. A remarkable feature was the persistence with which for eight years Beaumont pursued the subject, except during two intervals when St. Martin escaped to his relatives in Lower Canada. On one occasion Beaumont brought him a distance of two thousand miles to Fort Crawford, on the upper Mississippi, where, in 1829, the second series of experiments was made. The third series was conducted in Washington, in 1832; and the fourth at Plattsburg in 1833. The determination to sift the question thoroughly, to keep at it persistently until the truth was reached, is shown in every one of the 238 experiments which he has recorded.

The opportunity presented itself, the observer had the necessary mental equipment and the needed store of endurance to carry to a successful termination a long and laborious research. William Beaumont is indeed a bright example in the annals of the Army Medical Department, and there is no name on its roll more deserving to live in the memory of the profession of this country.

And in closing let me express the wish that each one of you, in all your works begun, continued and ended, may be able to say with him: "Truth, like beauty, 'when unadorned is adorned the most,' and in prosecuting experiments and inquiries I believe I have been guided by its light."

*_Experiments and Observations on the Gastric Juice and the Physiology of Digestion._ By William Beaumont, M. D., Surgeon in the United States Army. Plattsburg. 1833.

The physician should write because writing is one of the disciplines of science, because only by writing can he share his ideas with others, because only by writing can he introduce new ideas and intensify his own knowledge of his subject.

—R. de R. BARONDES, M. D.
in *Mississippi Valley Medical Journal*, p. 152, Sept. 1953

A METHOD FOR REDUCING MAN-HOURS LOST IN EXTENSIVE DENTAL TREATMENT

DONALD L. COOK, *Colonel, DC, USA*
SOL L. ORLEAN, *Major, DC, USAR*

IN this era of manpower shortage, the problem of rendering dental treatment in the military services with a minimum time loss from the patient's duties must be considered of prime importance. Its solution is not simple because dental treatment is a personal service rendered by an individual to an individual. It cannot be mass produced. Although there are many avenues of approach to the solution of the problem, we are reporting only one: the oral rehabilitation of the young man inducted into the armed services with a dental disability.

The causes of this disability are commonly found to be generalized caries, abscessed teeth, poor oral hygiene, and malocclusion; the result is "a dental cripple." The goal of oral rehabilitation is to make the serviceman a healthy link in an effective fighting force.

At this Army post where both enlisted and officer personnel attend schools for from 11 weeks to one year, it is imperative that their absence from classes be kept to a minimum. A large percentage of these men have had only two to three months of military service and are in the 19- to 22-year age group. In many instances the patient can only be rehabilitated orally by removal of his remaining teeth and replacement with either full upper and lower dentures, or full upper and partial lower ones.

Previously, surgical treatment of these patients extended over a period of from two to five weeks. The mouth was divided into tertiants, quadrants, or sextants, and a section was completed at each operation. After each operation the patient returned to his barracks for the day with the following written instructions:

1. Allow gauze pad to remain in place for 20 minutes after leaving clinic, biting hard during this time; then remove the gauze.

From Dental Detachment, Fort Monmouth, N. J.

2. Do *not* use a mouthwash for 12 hours. After 12 hours, use warm salt water (one half teaspoonful of salt in a glass of warm water) as a mouthwash four times a day. Do *not* use this wash vigorously.

3. To control swelling, apply ice packs or cold compresses to the area 20 minutes out of every hour.

4. Tablets in this envelope are for pain. Take one on arriving at barracks or home, one an hour later, and the remaining one three hours after the second.

5. To control excessive bleeding, place over the area a tea bag that has been soaked in hot water for three minutes. Close teeth tightly on the tea bag for 20 minutes. If necessary, repeat this process several times. Should prolonged swelling, pain, or bleeding follow the operation, return to the clinic for treatment.

Postoperative visits to the dental clinic were made at 24 and 96 hours, and sutures were removed on the last visit. This method resulted in inadequate postoperative care and lack of proper relief from pain, which in turn deprived the patient of adequate rest and diet. In many cases further time was lost through the student's inability to concentrate on his studies for two days after the operation; in addition many students complained of the time loss involved, and expressed extreme apprehension that they might fail to graduate with their class. Table 1 shows the number of duty hours 52 patients lost by this method. The minimum loss of duty hours (school time) by a patient was 16 hours and the maximum was 72 hours.

Because of these deficiencies an improved method for the management of students with dental defects, consisting of hospitalization and the extraction of the involved teeth at one sitting, was devised.

A patient usually was admitted to the hospital on Thursday for operation on Friday. He was permitted recuperation on Saturday and Sunday, and discharged to duty on Monday morning.

DESCRIPTION OF METHOD

Thursday: After the patient reported to the dental clinic, he was sent to the laboratory for a complete blood count, clotting and bleeding time, and a urinalysis, which were completed on an outpatient basis. He was then admitted to the hospital and given 600,000 units of penicillin.

Friday: The patient received a light breakfast and 300,000 units of penicillin at least one hour before the operation, and 0.1 gram of pentobarbital sodium one-half hour before the operation. He was wheeled to the oral surgery section of the dental

TABLE 1. *Patients treated on outpatient status*

TABLE 1. *Patients treated on outpatient status*

Age (years)	Duty hours lost	Number of teeth extracted	Number of visits for extractions	Number of visits postoperative treatment	Number of impacted teeth	Alveolectomy performed	Postoperative sequelas
47	30	13	3	3	0	upper	MI-ES
21	54	19	5	7	1	upper	MOD-ES
20	42	12	4	5	0	upper	MOD-ES
20	32	15	3	4	1	upper	MOD-ES*
20	38	10	4	3	0	upper	MI-ES
23	24	11	2	4	0	upper	MOD-ES
20	46	14	4	7	2	upper	SEV-ES
21	30	14	2	7	0	upper	SEV-ES
20	32	12	3	4	0	upper lower	MI-ES
20	34	11	3	5	1	lower	MOD-ES
21	44	13	4	6	2	upper	SEV-ES
24	52	11	5	6	1	none	MOD-ES
20	60	14	5	10	0	upper	MOD-ES**
21	42	10	4	5	0	none	MOD-ES
20	34	10	3	5	0	upper	MOD-ES
20	42	10	4	5	1	upper	MOD-ES
21	50	16	4	9	0	upper lower	SEV-ES

TABLE 1. *Patients treated on outpatient status*—Continued

Age (years)	Duty hours lost	Number of teeth extracted	Number of visits for extractions	Number of visits postoperative treatment	Number of impacted teeth	Alveolectomy performed	Postoperative sequelas
19	40	14	5	5	1	upper lower	MOD-ES
20	34	10	3	5	0	none	MOD-ES
38	38	14	4	3	0	lower	MI-ES
19	56	22	5	8	2	upper lower	SEV-ES
20	36	11	4	2	0	upper	MI-ES
20	36	10	3	6	0	upper lower	MOD-ES
21	40	14	4	4	0	upper	MI-ES
21	54	28	5	7	0	upper lower	MOD-ES
30	50	19	5	5	0	upper	MI-ES
23	32	16	3	4	0	upper lower	MI-ES
23	22	13	2	3	0	upper lower	MI-ES
21	30	11	3	4	0	upper	MOD-ES
21	54	10	5	7	2	upper	SEV-ES*
20	54	12	5	7	2	upper	SEV-ES

TABLE 1. *Patients treated on outpatient status*—Continued

TABLE 1. *Patients treated on outpatient status*—Continued

Age (years)	Duty hours lost	Number of teeth extracted	Number of visits for extractions	Number of visits postoperative treatment	Number of impacted teeth	Alveolectomy performed	Postoperative sequelas
20	54	17	5	7	1	upper lower	MOD-ES
21	38	10	4	3	0	upper	MI-ES
20	58	22	6	5	1	upper lower	MOD-ES
21	46	12	4	7	0	upper	SEV-ES
20	36	12	4	2	0	upper	MI-ES
25	32	11	3	4	2	lower	MI-ES
21	74	10	8	5	0	none	MI-ES**
20	38	13	4	3	0	upper	MI-ES
20	40	12	4	4	0	upper	MI-ES**
21	32	10	3	4	0	upper	MI-ES
20	52	22	5	6	1	upper	MOD-ES
20	36	9	4	2	0	none	MI-ES
20	56	18	4	12	2	upper	SEV-ES
21	66	30	6	9	0	upper lower	MOD-ES
23	28	13	2	6	0	upper	MOD-ES
19	28	9	3	2	1	none	MI-ES

TABLE 1. *Patients treated on outpatient status*—Continued

Age (years)	Duty hours lost	Number of teeth extracted	Number of visits for extractions	Number of visits postoperative treatment	Number of impacted teeth	Alveolectomy performed	Postoperative sequelas
21	54	20	5	7	1	upper	MOD-ES
20	24	13	2	4	0	upper	MI-ES
21	36	16	3	6	2	upper	MOD-ES
20	44	12	4	6	3	upper lower	MOD-ES
20	62	24	5	11	0	upper lower	MOD-ES
Total	2,196	734	206	280	30		
Average	42.2	14.1					

*Cystectomy
**Cellulitis present before extractions.

MI = Mild
MOD = Moderate
SEV = Severe

E = Ecchymosis
S = Swelling

clinic. Under local anesthesia, extraction of the teeth was completed. Because of the age group involved, the maximum amount of alveolar bone was conserved to permit the satisfactory construction of dentures. Postoperatively 300,000 units of penicillin was given every six hours for 48 hours beginning at 1500 hours. Ice packs were applied to the face 30 minutes out of every hour, and a warm saline mouthwash, starting eight hours after operation, was used every two hours. The patient was placed on a soft diet and given 16 mg. of morphine sulfate or 100 mg. of meperidine hydrochloride (demerol) for pain and 0.1 gram of secobarbital sodium (seconal) for sleep.

Saturday: If the patient's temperature was normal, he was allowed to get up, although all meals were taken on the ward.

Sunday: The patient was ambulatory and all meals were taken in the mess hall.

On *Monday* morning the patient was discharged to duty. Postoperative treatment was continued on an outpatient basis from 48 to 72 hours later, and the sutures were removed at this single visit.

This method resulted in excellent postoperative convalescence and healing with minimal swelling, discomfort, and pain. The patient received adequate diet and rest to overcome possible shock, and was able to concentrate on his studies at the start of the next school week and to make up the lessons he had missed. Each patient was pleased to have had his dental treatment completed in this manner, because fear had been the principal deterrent to treatment in civilian life. The minimum loss of duty hours from school classes was eight hours and the maximum was 56 hours for any one patient (table 2).

To compare the two methods, a means for scoring duty hours was devised to evaluate the dental visits in the number of duty hours lost. A value of an eight-hour duty loss, or one duty-day, was placed on a visit when teeth were extracted, and a two-hour loss for each postoperative visit. This method of evaluation was based on the premise that the loss of duty hours, not of off-duty hours, was what counted.

Because Saturday and Sunday are normal off-duty days at this post, the actual duty hours lost while the patient was hospitalized would be on Thursday and Friday. If an alveolectomy, frenectomy, cystectomy, removal of impacted teeth, or antrum closure were performed during operation under either method it was not included in the scoring as these would average the same.

TABLE 2. *Patients treated in the hospital with a single postoperative visit to the dental clinic*

Age (years)	Duty hours lost	Number of teeth extracted	Number of impacted teeth	Alveolectomy performed	Postoperative sequelas
21	42	20	0	upper lower	MOD-ES
19	42	14	1	upper lower	MOD-ES
20	34	19	1	upper	MOD-ES
20	26	15	0	upper	MOD-ES
21	26	20	0	upper lower	MOD-ES
22	18	17	0	upper	MI-S
20	18	12	0	upper	MI-S
20	18	15	0	upper	MI-S
21	26	17	0	upper	MOD-ES
20	26	13	0	upper	MOD-ES
20	18	9	0	upper	MI-S

TABLE 2. *Patients treated in the hospital with a single postoperative visit to the dental clinic*—Continued

TABLE 2. *Patients treated in the hospital with a single postoperative visit to the dental clinic*—Continued

Age (years)	Duty hours lost	Number of teeth extracted	Number of impacted teeth	Alveolectomy performed	Postoperative sequelas
20	18	14	0	upper	MI-S
20	18	17	2	upper	MI-S
20	18	20	0	upper lower	MI-S
20	18	18	0	upper lower	MI-S
20	18	14	0	upper	MI-S
20	18	16	1	upper lower	MI-S
20	18	18	0	upper	MI-S
20	18	14	2	upper	MI-S
20	18	22	1	upper	MI-S
20	18	18	0	upper	MI-ES
20	18	14	0	upper	MI-ES
20	18	12	0	upper	MI-S

TABLE 2. *Patients treated in the hospital with a single postoperative visit to the dental clinic*—Continued

Age (years)	Duty hours lost	Number of teeth extracted	Number of impacted teeth	Alveolectomy performed	Postoperative sequelas
22	58	26	5	upper lower	SEV-ES
57*	18	5	0	upper	none
20	18	28	2	upper lower	MI-S
20	18	12	0	upper	MI-S
21	18	32	3	upper lower	MI-ES
20	18	17	2	upper	MI-ES
52*	10	25	0	upper lower	MI-ES
20	18	16	3	upper lower	MOD-ES
19	26	16	0	upper	MOD-ES
18	18	15	0	upper lower	MI-ES

TABLE 2. *Patients treated in the hospital with a single postoperative visit to the*

				lower	

TABLE 2. *Patients treated in the hospital with a single postoperative visit to the dental clinic*—Continued

Age (years)	Duty hours lost	Number of teeth extracted	Number of impacted teeth	Alveolectomy performed	Postoperative sequelas
19	18	31	4	upper lower	MI-ES
23	10	13	0	upper	none
21	18	32	4	upper lower	MI-ES
22	18	14	4	upper lower	MI-ES
21	18	13	1	upper	MI-S
20	18	14	0	lower	MI-S
21	18	14	0	lower	MI-S
20	18	15	0	upper	MI-S
21	18	11	0	upper	MI-S
20	34	27	1	upper lower	MOD-ES
20	18	9	1	upper	MI-S

TABLE 2. *Patients treated in the hospital with a single postoperative visit to the dental clinic*—Continued

Age (years)	Duty hours lost	Number of teeth extracted	Number of impacted teeth	Alveolectomy performed	Postoperative sequelas
21	34	16	2	upper lower	MOD-ES
21	26	13	0	upper	MOD-ES
37	18	14	0	upper lower	MOD-S
20	18	29	0	upper lower	MI-S
24	18	23	0	upper lower	MI-S
20	18	13	1	upper	none
26	18	15	0	upper	none
20	18	17	1	upper	MOD-ES
Total	1,104	893	42		
Average	21.2	17.1			

*Hospitalized for other reasons. MI = Mild MOD = Moderate E = Ecchymosis S = Swelling SEV = Severe

CONCLUSION

The co-operation of medical and dental facilities in extensive oral surgical procedures at military posts, camps, and bases contributes much to the welfare of the patient and will result in a 50-percent reduction in the duty man-hours lost due to extensive dental treatment.

Nurses at Thule Air Force Base Are Only 900 Miles From Pole

The three U. S. Air Force nurses stationed at Thule Air Force Base in Greenland, who are only 900 miles from the North Pole, are shown during a recent visit by Major General Harry G. Armstrong, Surgeon General of the Air Force. Dressed for the Greenland weather, left to right, are: Captain Sophia Schadt, USAF (AFNC); Colonel Lee F. Ferrell, USAF (MC), Surgeon, Northeast Air Command; First Lieutenant Helena M. Costa, USAF (AFNC); General Armstrong; and Second Lieutenant Christina A. Stevens, USAF (AFNC).

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LENGTH OF PATIENT STAY IN ARMY HOSPITALS

WILLIAM S. MOORE, *Colonel, MC, USA*
CHARLES J. SHIVELY, *Major, MSC, USA*

THE length of patient stay in Army hospitals is a subject of continual concern to the Medical Service. In the interests of efficiency, economy, and maximal use of personnel and facilities, it is necessary that every action possible be taken to eliminate those factors which may contribute to prolonged length of patient stay and to unnecessary hospitalization. For the purpose of this article the term "prolonged length of patient stay" refers to that portion of bed-occupied time over and above that required for professional treatment. (It results from administrative practices and procedures that tend to delay treatment and disposition of the patient.) The term "unnecessary hospitalization" refers to the admission of patients to the hospital or their retention in a bed-occupied status when they require no treatment or when they could be treated as outpatients without detriment to their health.

For the past two and one half years this problem has been the subject of several studies in this office. In 1950 representatives of the Bureau of the Budget and the Department of Defense participated jointly in a study of the problem, as a result of which the stay of military patients in Army hospitals, over and above medical necessity, was estimated as about 20 percent of the total bed-occupied days. This survey was not, however, representative of the patient load in the continental United States because no station hospitals were included in the survey. Such hospitals have a preponderance of short-term, local patients whose disposition is attended by a minimum of administrative delay.

SURVEY RECOMMENDED BY BUREAU OF THE BUDGET

In July 1952, representatives of the Bureau of the Budget recommended that a survey be conducted to determine the current percent of excess length of patient stay attributable to administrative procedures. This survey was conducted by representatives of the Surgeon General's Office in August and

From Office of the Surgeon General, Department of the Army.

September. In order that a more representative sample of the patient load in the Army hospital system in the United States might be obtained, two general hospitals, two station hospitals which have also been designated as specialized treatment centers, and three station hospitals providing only post medical care were selected for the survey. Although the over-all results of the 1950 and 1952 surveys are not comparable, comparison of the results obtained at the only general hospital included in both surveys indicates a great reduction in that part of patient stay due to administrative procedures. At this hospital, excess stay was estimated to be 20 percent in 1950 and about 12 percent in 1952.

TABLE 1. *Summary of survey of length of patient stay (August and September 1952)*

Number of patients included in survey	707
Assigned patients	73 (10.3 percent)
Attached patients	634 (89.7 percent)
Bed-occupied days	15,939
Assigned patients	6,890 (43 percent)
Attached patients	9,049 (57 percent)
Bed-occupied days due to administrative delay	1,228
Assigned patients	846 (69 percent)
Attached patients	382 (31 percent)
Average number of days delay per patient	1.7
Assigned patients	11.6
Attached patients	0.6
Average duration of hospitalization in days	22.5
Assigned patients	94.4
Attached patients	14.3
Percent of bed-occupied days due to administrative delay	7.7
Assigned patients	12.3 percent
Attached patients	4.2 percent

Table 1 summarizes the results of the 1952 survey. Any delay incident to the processing of patients by physical evaluation boards were not included because the responsibility for such boards does not rest with the hospital commander. Generally speaking, "assigned patients" are those who have been hos-

pitalized in excess of 90 days or who require processing for disability separation by means of a physical evaluation board. The hospital has almost complete administrative responsibility for assigned patients and many complex administrative problems may be encountered in effecting their disposition. The "attached patients," on the other hand, are those for whom the hospital has little administrative responsibility, and who may be returned to their organization on completion of medical treatment with a minimum of administrative work. They remain assigned to their organization and are only attached to the hospital for the purpose of receiving medical care.

AREAS OF DELAY CAN BE REDUCED

Although little delay was experienced in returning the short-term (attached) patients to duty on completion of treatment, there are three major areas of delay which can be effectively reduced. These consist of (1) delays of from one to three days in effecting a return to duty, (2) preoperative delays in elective surgical procedures, and (3) retention in a bed-occupied status when no further treatment is required, or admission to the hospital for conditions which could have been treated on an outpatient basis (mostly patients admitted to the hospital for evaluation prior to separation for conditions which existed prior to service; those who were being separated for administrative unfitness when such action was not medically indicated; or those who were retained for completion of routine dental work, results of special examinations, et cetera).

Adequate corrective measures, which may be used at the hospital or installation level for most of the delays in discharging attached patients, are provided for in existing directives and Army Regulations. It appeared that these delays existed primarily because such directives were not fully implemented at the hospitals concerned.

REASONS FOR PROLONGED STAY

To discover the major reasons for prolonged length of patient stay and unnecessary hospitalization we must look to the long-term (assigned) patients. One important problem area involves the return of these patients to duty. For patients in this category, it is necessary to secure duty-assignment instructions from the Adjutant General. The primary cause of their prolonged length of stay is the failure on the part of the ward officer to anticipate their return to duty so that assignment instructions may be obtained prior to the scheduled date of release from the hospital and concurrent with the final stages of treatment. A recent change to regulations pertaining to the assignment of patients provides that in the event reassignment instructions have not

been received by the time hospital treatment is completed, the patient will be placed on temporary duty with the hospital duty detachment or with an Army organization at or near the hospital for the performance of duty until reassignment instructions are received. This removes him from a bed-occupied status although he continues to be carried as a "remaining" patient. The hospital commander's efforts to eliminate the delay involved in securing reassignment instructions from the Adjutant General should, however, emphasize the anticipation of return to duty rather than the provisions for temporary duty.

Necessity for securing previous records. It was also noted in the survey that appearance before a medical board and physical evaluation board for disability-separation processing has been delayed, in some instances as long as two months, because of the necessity of securing previous medical records from the Adjutant General. In many cases, however, investigation revealed that ward officers did not submit a request for such records as soon as they had reasonably ascertained that the patient would require the action of a board. It is realized that when the period of necessary observation and treatment prior to the action of a physical evaluation board is short and previous medical records are required, some delay will still result, even if all possible action under existing regulations is taken by the hospital concerned. This matter is currently under study by the Surgeon General and the Adjutant General with a view toward reducing the time required to secure such records.

Transferal to convalescent or holding stations. Another problem contributing to prolonged length of patient stay involves convalescent patients and patients awaiting administrative processing who have completed treatment. At most hospitals such patients are transferred to convalescent or holding sections and in some instances these patients tend to become "lost" or overlooked. Responsibility for these patients should be clearly defined. A periodic check of these patients is essential.

Administrative delay. The appearance of patients before a medical board prior to disability-separation processing is another cause of prolonged length of patient stay. The most frequent reason for this delay was the failure of the ward officer to complete the clinical record and prepare the clinical summary necessary for the medical board. Such delays were generally blamed on the heavy workload of the ward officers and the lack of adequate and skilled stenographic assistance. The action and processing of these cases must be assigned such priority as to insure their expeditious completion. Hospital commanders should consider the problem of inadequate stenographic assistance in

order that the best possible system may be adopted from the standpoint of efficiency and maximal use of personnel.

SURVEYS RECOMMENDED

The Surgeon General has recommended that each Army hospital conduct a survey to determine the length of patient stay at least once each year. The object of such surveys is to determine what factors contribute to prolonged length of patient stay and unnecessary hospitalization in order that necessary corrective action may be instituted. It was further recommended that a summary of the findings of the survey be forwarded to the Surgeon General with a presentation of any specific problems that the hospital commander may care to include and his recommendations for corrective action. The description of these problems and the recommendations will be disseminated to other hospitals in order that all hospital commanders may take advantage of solutions evolving through such studies. The results of the survey, including questionnaires completed, are to be maintained at the hospital concerned for review by representatives of the Army Surgeon and the Surgeon General.

Army Surgeons have been requested to conduct similar surveys at all hospitals under the jurisdiction of their headquarters and surveys will be conducted at selected general hospitals by a survey team from the Surgeon General's Office. It is further contemplated that the survey team will conduct a survey at one station hospital within each Army area, annually.

The survey conducted in 1952 revealed a lack of initial and follow-up indoctrination of both professional and administrative personnel incident to the problems of prolonged length of patient stay and unnecessary hospitalization and their effects on costs, personnel, and materiel requirements. It was also noted that there was a reluctance on the part of some ward officers to assume their responsibilities pertaining to early disposition of patients concurrent with the completion of treatment. This duty is solely that of the physician concerned and includes preparation of clinical summaries, anticipation of disposition, follow-up of convalescent patients, and initiation of action to achieve early disposition of patients who are considered unlikely to return to duty. It was suggested that each hospital commander prepare a summary of those factors which were determined by his survey to contribute to prolonged length of patient stay and unnecessary hospitalization at his hospital. Such a summary could be used for the initial and follow-up indoctrination of all assigned professional and administrative personnel and should outline the recommended corrective procedures.

ACTION BY SURGEON GENERAL

Much progress has been made and a study of all elements pertinent to the management of military personnel during any periods when they do not need hospital ward care has been started at Fort Belvoir, Va. Included are those patients who are either incapacitated for duty while undergoing diagnostic procedures or who must be retained under medical jurisdiction for administrative purposes.

Factors of a purely professional nature which may contribute to this problem are the subject of continuing study and review by the professional consultants and other professional personnel of the Surgeon General's Office. In a letter to each Army Surgeon, dated 10 November 1952, the Surgeons General recommended that representatives of the medical staff of the Army Surgeon's office review the factors contributing to length of patient stay, when visiting hospitals of their command, with particular attention to patients who have exceeded one year of hospitalization. Representatives of the professional divisions and the Inspector General of the Surgeon General's Office have been asked to make a similar review when visiting general hospitals.

Hospital commanders should give their personal attention to this problem. All personnel concerned with the disposition and treatment of patients should be familiar with the pertinent regulations and directives. Patients should be considered by a medical board or referred to a physical evaluation board for recommendations regarding disposition within the time limits prescribed. Instructions for the early transfer to Veterans Administration hospitals of patients who are considered unlikely to return to duty and who require further hospitalization have been published in regulations and directives.

In any program encompassing a reduction in length of patient stay, medical officers must never lose sight of the primary mission of the Medical Service, namely, conservation of manpower. It is not the intent of such a program to minimize required medical care and treatment, or to preclude the use of sound professional judgment in any case. This program, however, is an important step in the economical operation of the Army hospital system.

Gastric and duodenal ulcers may follow sunburn, as noted among sea bathers. Sunburn (also) causes toxicity; alters the hemic, chemical, and cellular elements; disturbs normal metabolism; and creates physical and mental suffering.

—N. B. JAFFE, M. D.
in *Mississippi Valley Medical Journal*, p. 152, Sept. 1953

Army Surgeon General Addresses 38th Parallel Medical Society

Major General George E. Armstrong, second from left, Surgeon General of the U. S. Army, is shown with some members of the United Nations' "international medical team," as he referred to them in an address he had just concluded on 17 January 1954 before the members of the 38th Parallel Medical Society in Korea. In the group at Headquarters, I Corps, U. S. Army, left to right, are: Colonel Erik Thoresen, Commanding Officer, Norwegian Mobile Army Surgical Hospital; General Armstrong; Commander George Donabedian, MC, USN, Commanding Officer, 1st Medical Battalion, USMC; Captain Matron F. M. Brohman and Colonel J. S. McCannel, Royal Canadian Army Medical Corps; Brigadier General Stuart G. Smith, Surgeon, Eighth U. S. Army; and Nursing Sister Lieutenant S. Hill, Royal Canadian Army Medical Corps.

General Armstrong's latest trip to Korea was his fourth since the beginning of hostilities. He was accompanied to I Corps headquarters by Major General Earle Standlee, Surgeon, United States Army Forces, Far East, where they were met by Colonel Ralph V. Plew, Surgeon, I Corps.

A PHYSICAL MEDICINE WARD IN AN ARMY HOSPITAL

DAVID RUBIN, *Captain, MC, AUS*
ERNEST F. ADAMS, *Major, MC, USA*
NORMAN WILEY, *Colonel, MC, USA*
WILLIAM R. TORGERSON, *First Lieutenant, MC, AUS*

MUCH has been written on the value of a total rehabilitation program in civilian life in restoring function and returning the disabled patient to a productive life physically, socially, and economically.[1-5] Equally important is the restoration and return of the war-injured patient to a productive civilian or military life. Although the demands made on the individual will vary with the type of service, or employment, the rehabilitation program will be essentially the same for all except for the vocational and, in some instances, the psychologic aspects. We have had an opportunity for several months to observe in a pilot study the value of an integrated program of physical treatment and psychosocial adjustment wherein the physical medicine service at Percy Jones Army Hospital was provided a ward with an adequate number of beds for patients requiring definitive physical medicine procedures to achieve functional recovery. Although a longer period of observation and study would have permitted a more thorough analysis of the value of this plan, the impressions we formed are sufficiently promising to warrant a presentation of the advantages for possible future use in other military hospitals.

The new physical medicine unit consisted of a three-floor annex to the hospital. The ground floor was divided into three sections for (1) electrotherapy and heat treatments, (2) hydrotherapy, and (3) exercise and prosthetic training (fig. 1). On the second floor were administrative and physicians' offices, facilities for diagnostic aids such as electromyography and plethysmography, and the occupational therapy section (fig. 2). The third floor consisted of a 45-bed ward with an attached recreation room and the physical reconditioning section and its administrative offices (fig. 3). The construction and correction of appliances was conveniently located in the hospital brace shop

From Percy Jones Army Hospital, Battle Creek, Mich. Capt. Rubin is now at Brooke Army Hospital, Fort Sam Houston, Tex.

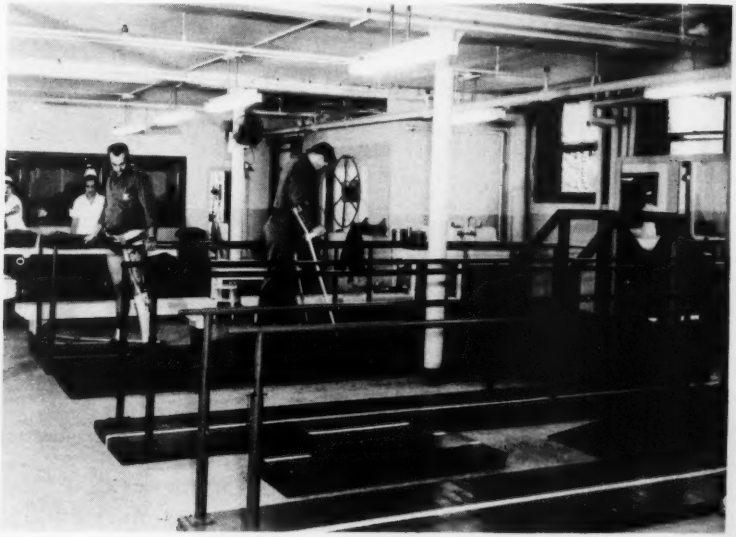

Figure 1. Prosthetic training section.

on the floor below the physical therapy section. The patients had ready access to the shop, the treatment sections, and the ward by way of an automatic, self-service elevator. Prior to the opening of the physical medicine unit the chiefs of the hospital

Figure 2. The occupational therapy woodshop section.

services devised an operational procedure for the transfer to the physical medicine ward of patients who had received maximum orthopedic, neurosurgical, or surgical and medical treatment and required only continued physical medicine treatment for restoration of maximum function.

PROCEDURE AND CORRELATION OF SERVICES

Each recommended patient was interviewed and examined by one of us, prior to acceptance for transfer to the physical medicine ward. If it was determined that the patient was in need of definitive physical medicine care, a transfer note was written and a prescription for treatment was outlined. Formal ward rounds were conducted weekly by the staff physiatrists accompanied by a representative from the physical therapy, occupational therapy,

Figure 3. The physical reconditioning section adjacent to the physical medicine ward.

and physical reconditioning departments, the medical social worker, and the noncommissioned officer assigned as wardmaster.

The progress of each patient was reviewed in detail. The range of motion of affected joints was measured, the extent of return of muscle function was determined, further diagnostic tests were outlined as needed, and problems relating to daily treatment were discussed. The therapists raised questions relating to the daily treatment program and supplied invaluable information regarding motivation, response to treatment, co-operation of the patient, and other problems patients frequently discuss with them more freely than with the physician. The granting of passes, possibility of return to duty, vocational interests, prevocational training, and personal problems were discussed, and appropriate disposi-

tion or referral was arranged at the bedside. Personal problems requiring more detailed study and investigation were referred to the medical social worker. Bracing problems for peripheral nerve injuries, prosthetic appliance adjustments and shoe corrections were discussed and immediate recommendations made for their care. The wardmaster was also informed when a patient was ready for light duty about the ward or in the departmental sections. In this way the individual was gradually given responsibility compatible with his physical condition, and his work tolerance was determined for eventual return to duty.

Each week, orthopedic and neurosurgical rounds were conducted with a physician of the respective services to review recent roentgenograms and to discuss the patients' progress or lack of progress, future surgical procedures, possible return to duty, or presentation to a physical evaluation board. The exchange of ideas between physicians of the various services served to increase the scope and effectiveness of treatment, and provide a continuous teaching-learning stimulus to the professional staff. The common goal of achieving the most rapid and complete rehabilitation of each patient was thus fostered and put into operation.

MOTIVATION OF THE PATIENT

Patients admitted to the physical medicine ward associated with other patients who, like themselves, had residual conditions requiring only physical medicine treatment for the completion of the program designed to return them to useful activity. The rigid routine of medication, nursing, and complete or partial bed rest was no longer a barrier to the patient's desire to be mobile and to maintain a schedule of physical treatment aimed at restoring him to a self-sufficient and productive status. The competitive aspect of observing a similarly injured comrade engaged in the same program stimulated and encouraged each patient to greater and more persistent effort. As soon as feasible a patient was given a task commensurate with his physical ability. This was used as a work tolerance measurement, and served to awaken a desire to contribute to the functioning of the ward and the various units within the physical medicine section. Work activities consisted of cleaning the whirlpool baths and Hubbard tanks, sweeping and mopping ward floors, latrine duty, and dusting of ward furniture. Each patient was responsible for the care of his own bed and immediate bed area. The assigned duties did not interfere with treatment. Week-end passes and convalescent leaves were granted on the basis of personal achievement in the treatment program, which served to motivate the patient and in most instances, stimulated his maximum effort and co-operation. Experience showed that in this type of wholesome atmosphere the patient developed greater interest and a more personal attach-

ment to his physician. Patient-doctor rapport and patient morale appeared higher and the patient exhibited a more intense desire to attain a definitive goal in the total treatment program. Patients were outspoken in their expression of gratitude for the attention and interest centered upon them as a person. Group affiliation coupled with individual attention satisfied the needs of almost everyone admitted to the ward. The proximity of the patient to all of the necessary treatment areas saved his time for other activities.

OBSERVATIONS

In three and one-half months of ward operation, 93 patients were admitted to the physical medicine ward to receive definitive treatment. Of these, 75 received maximum benefit and were discharged to duty. Several others received maximum benefit but, because of the nature of their disabilities, were discharged to a civilian status. It was the consensus of the professional staff that patients achieved maximum benefit and returned to duty in a shorter time, with greater confidence and a more thorough understanding of their individual problems and residual disabilities than previously had been possible. The experiment has been successful and interesting, and is worthy of further observation and study.

CONCLUSIONS

We believe that attainment of specific treatment goals and return of patients to duty status is accomplished more efficiently and effectively by a unified approach to rehabilitation through the establishment of a separate physical medicine ward. Greater patient control with immediate attention to specific problems is facilitated. The distractions of medical or surgical ward routine are avoided, and each patient can expend all of his time and energy in achieving a medically prescribed goal leading to rehabilitation. In this way the conservation of fighting strength is achieved more rapidly without sacrificing the individual needs of each patient.

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Womble Report, Hannah Letter of Interest to Medical Officers

The report of the Womble Committee, published on 30 October 1953, outlined a course of legislative action in its recommendations designed to make the military service more attractive as a career. The report was widely quoted by both the lay and military press. Recently Assistant Secretary of Defense John A. Hannah, in a letter on 8 January 1954, to the Honorable Dewey Short, Chairman of the Committee on Armed Services of the House of Representatives, described some of the problems of career officers in the military services, and offered suggestions for their solution. Following is the complete text of Mr. Hannah's letter:

Dear Mr. Chairman:

The opportunity which your letter of 26 October 1953 affords the Department of Defense to comment at length on recent developments regarding the conditions of service of military personnel is greatly appreciated. It is fully agreed that these problems are of fundamental importance, and that their solution calls for our detailed consideration and study.

Present difficulties of the armed forces, with which you are of course familiar, stem primarily from current world conditions. The United States is not at war, nor at peace. We are simultaneously mobilizing and demobilizing large temporary forces every two years. Almost half of our forces are deployed overseas. These are conditions which this country has never before had to meet. They may continue for years.

The armed forces have peacetime military personnel career policies, designed to provide and train, during time of peace, highly qualified professional military personnel to mobilize and lead large temporary forces. During wartime these policies are largely superseded by others specifically designed to aid in bringing military operations to the earliest possible conclusion. Neither peacetime nor wartime personnel career policies suit our situation today. We must proceed to make the changes required to meet current conditions. It is heartening to know that you and your Committee are preparing to lend your indispensable assistance to this effort.

In compliance with your request, the conclusions and supporting facts of the Hook Commission concerning service benefits (considered as part of pay) are forwarded herewith. The Commission concluded that special emoluments such as medical attention, etc., are balanced out by the special expenses incurred by officers due to their service.

A comparative analysis of the differences in the pay and benefits received by Foreign Service officers and those received by armed forces officers emphasizes the fact that our present military career policies are not adapted to the situation today. The Foreign Service officer must, by the nature of his employment, make frequent changes of station and spend many years in oversea assignments. The Congress appears to have recognized that the Foreign Service officer is entitled to a normal family life and a relatively stable income, and that any unusual expenses required to provide these benefits to him at any particular station should be borne by the Government (with the notable exception of paying for the education of his children). This appears only just, since the Foreign Service officer's assignment reflects the needs of the country, and is not a matter within his own control.

An armed forces officer's peacetime assignments were relatively stable between World War I and World War II. During this time tours of four and five years at one station were common. Oversea assignments were few, and an officer's family could accompany him. Unusual expenses occasioned by changes in assignment were relatively infrequent. These conditions do not obtain today, and may not return for many years. Now armed forces officers must make frequent changes of station and serve much time overseas. They are separated from their families for long periods. It is to be hoped the Congress will recognize the justice of safeguarding military personnel as well from family separations and monetary losses resulting from an assignment, which again, is not a matter within their control.

An examination of the legal benefits accorded those in the regular service as opposed to the legal benefits accorded those in the reserve components reveals that in several important matters it is greatly to the individual's advantage to leave the regular establishment for the reserve components. The astonishing difference between the benefits paid the widow of a reserve over those paid the widow of a regular is most striking. However, and perhaps equally important to the maintenance of a strong regular establishment, is the fact that the two "GI" bills, whose benefits are denied to regulars, in effect, offer an immediate inducement to individuals to leave the military for civilian life. This incentive to leave the military service can be neutralized to some extent by allowing regulars to qualify for benefits of these bills. No substantial expense to the Government should be involved, since at present these benefits are merely deferred until the regular's retirement.

The study of current officer retirement provisions, in particular the lessened expense for pay and allowances to the Government of allowing

an individual to retire voluntarily after 20 years' service rather than retain him for 30 years, is of particular interest at this time, when it appears that a reduction in the strength of the armed forces may become a reality. Often an immediate reaction is that it would be throwing money away to train an individual at Government expense for 20 years and then, just when he presumably is entering his most productive period, allow him to retire. However, on reflecting that such an individual's services would remain available to the country in time of emergency, and noting that by spending somewhat less money for pay and allowances the country could train three men in place of two, and considering that a man retired after 20 years would still be young enough to make a valuable contribution to the civilian economy, it is possible to conclude that it would be to the long-run advantage of the country not only to permit but perhaps to encourage voluntary 20 year retirement.

Detailed information covering the specific questions posed in your letter is attached as enclosure 1.* The Secretary of State has extended his complete cooperation in the preparation of this material.

Recommendations as to legislation remedying defects will be found in enclosure 2.* As indicated, some items have been coordinated within the Department of Defense but have not been cleared by the Bureau of the Budget for conformity with the program of the President; others are in the process of Department of Defense coordination. There will be additional recommendations forthcoming as a result of study which will be forwarded to you when prepared.

The attached material demonstrates that appropriations riders have modified, and in some cases negated, many incentives to a military career which were authorized by carefully considered legislation. Your Committee is of course familiar with the congressional action concerning commissaries. It is considered that had the matter of armed forces commissaries received the same judicial attention as the Philbin subcommittee gave the armed forces exchanges, the action of the Congress in this matter would have been quite different. The same is true with respect to riders affecting messes, shipment of household effects, voluntary retirement, employment restrictions and educational provisions. It is hoped that the Congress, during this forthcoming session, will review all appropriations riders which have the effect of modifying permanent legislation with a view toward embodying them in permanent legislation if they are determined to be justified, or deleting them from future appropriations acts.

Sincerely yours,
John A. Hannah

*Not reprinted.

Official Decorations

SILVER STAR

Edward L. Farrar, *Lt. (jg), MC, USNR*

James R. Heersma, *Lt. (jg), MC, USNR*

LEGION OF MERIT

Lowyd W. Ballantyne, *Col., USAF (MC)*
Robert F. Bell, *Lt. Col., MC, USA*
Calvin T. Doudna, *Comdr., MC, USN*
Henry C. Harrell, *Col., MC, USA*
Venard R. Jackson, *Comdr., DC, USN*
Richard Lawrence, Jr., *Comdr., MC, USN*
Horace G. Love, Jr., *Lt., MC, USNR*
Frederick A. Rodewald, *Maj., USAF (MSC)*
Carl W. Rumpf, *Col., MC, USA*
Frank C. Spencer, *Lt. (jg), MC, USNR*

BRONZE STAR MEDAL

Robert M. Adams, *Lt. (jg), MC, USNR*
Bernard C. Annenberg, *1st Lt., MSC, USA*
Nora P. Barry, *1st Lt., NC, USA*
Carlos M. Berrocal, *Capt., MSC, USA*
Ovid L. Bledsoe, *Capt., MC, USA*
Edgar S. Bowerfind, Jr., *Capt., MC, USA*
Joseph T. Brady, *Maj., MSC, USA*
John W. Brophy, *1st Lt., MC, USA*
Harvey E. Brown, Jr., *Capt., MC, USA*
Delma W. Caldwell, *Maj., MC, USA*
Philip A. Canal, *Comdr., DC, USN*
Byron D. Casteel, *Lt. Comdr., MC, USN*
Franklyn D. Church, *Lt. (jg), DC, USNR*
James R. Clark, *Maj., MSC, USA*
Barton E. Clemens, *1st Lt., MC, USA*
Robert I. Cochran, *Capt., DC, USA*
John J. Coleman, *Maj., MSC, USA*
Nicholas S. Comitos, *2d Lt., MSC, USA*
Milton Cooper, *Lt. (jg), MC, USNR*
Leo J. Corazza, *1st Lt., MC, USA*
Timothy J. Curran, *Capt., MSC, USA*
Robert J. Davis, *Capt., MSC, USA*
Thomas D. Davis, *Capt., MC, USA*
Edward J. DeNicolais, *Capt., MC, USA*
James B. Dibble, *Lt., MC, USNR*
Marvin J. Eakes, *1st Lt., MSC, USA*
Gene P. Eardley, *Capt., MC, USA*
Edwin Feldman, *Capt., MC, USA*
James P. Fick, *1st Lt., MC, USA*
Robert J. Fleischaker, *Lt., MC, USN*
R. F. Fortuno-Carmona, *1st Lt., MC, USA*
Samuel R. Frazier, *1st Lt., MC, USA*
James W. Galloway, *1st Lt., MSC, USA*
Don E. Gibbin, *Capt., DC, USA*
Jay W. Gilbert, *1st Lt., MSC, USA*
Malvin U. Goldstein, *1st Lt., MSC, USA*
Edward W. Green, *Lt. (jg), MC, USNR**
Paul F. Gryska, *Lt. (jg), MC, USNR*
Louis C. Hall, *Capt., MC, USA*
Monte E. Hanley, *1st Lt., MSC, USA*
Charles A. Harris, *Capt., MSC, USA*
Philip W. Heuman, *Capt., MC, USA*
James R. Hines, *Capt., MC, USA*
Wayne E. Hird, *Lt. (jg), MC, USNR*
Harry L. Hoffman, *Lt., MC, USN*
Harry N. Hoffman, *1st Lt., MC, USA*
Thomas E. Howard, *1st Lt., MSC, USA*
John J. Imarisio, *1st Lt., MC, USA*
Frank K. Inui, *Capt., MC, USA*
Gerson Jacobs, *1st Lt., MC, USA*
Aaron B. Johnson, *1st Lt., MC, USA*
Richard E. Jones, *Capt., MC, USA*
Harold L. Kemp, *1st Lt., MSC, USA*
John H. Kennedy, *Lt., MC, USNR*
Robert W. Kimball, *Lt. (jg), MC, USNR*
James L. Kingsland, *Maj., MC, USA*

*Oak Leaf Cluster

The names of officers of the medical services who have been awarded decorations by the United States Army, Navy, or Air Force since the beginning of the Korean campaign will be published following receipt of this information from official sources.

—Editor

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BRONZE STAR MEDAL—Continued

John L. Krieger, *1st Lt., MC, USA*
Ralph Kustoff, *1st Lt., MC, USA*
John M. Lanpe, *1st Lt., MC, USA*
Leo M. Lay, *Lt., MSC, USN*
Bernard K. Levin, *Capt., MC, USA*
Anthony Macaluso, *Maj., MC, USA*
Philip Manners, *Maj., USAF (DC)*
Edwin D. McMeen, *Lt. Col., MSC, USA*
Barney E. McRae, Jr., *1st Lt., MSC, USA*
Leo P. Middleman, *1st Lt., DC, USA*
George T. Murray, Jr., *1st Lt., MSC, USA*
Wesley R. Nowell, *Capt., USAF (MSC)*
Wallace L. Ostby, *Capt., MSC, USA*
Ruth E. Patterson, *Capt., NC, USA*
Laverne F. Pfeifer, *Lt. (jg), MC, USNR*
G. Ramirez-De Areliano, *1st Lt., MC, USA*
John C. Rissler, *Capt., MSC, USA*
Thomas F. Russo, *1st Lt., MSC, USA*
William L. Saylor, *2d Lt., MSC, USA*
Robert M. Schuyler, *Lt. (jg), MC, USNR*
Thomas M. Shearer, *1st Lt., MC, USA*
Franklin G. Sitton, *Maj., MSC, USA*
Harvey I. Sladkus, *1st Lt., MSC, USA*
Francis D. Snyder, *Capt., DC, USN*
James E. Sparks, *Lt. (jg), MC, USNR*
Robert K. Spiro, *1st Lt., MC, USA*
Charles N. Stevens, *1st Lt., MSC, USA*
Leo B. Stoller, *1st Lt., MC, USA*
Isami S. Tashima, *Capt., MC, USA*
Acors W. Thompson, *Maj., MC, USA*
Orlando L. Tonti, *WOJG, MC, USA*
Paul K. Tucker, *1st Lt., MSC, USA*
Clark W. Virtue, *Capt., MC, USN*
Joseph M. Ward, *Lt. (jg), MC, USNR*
Joseph B. Wargo, *1st Lt., MSC, USA*
Warren N. Wheeler, *Capt., DC, USA*
Kenneth R. Wilson, *1st Lt., MSC, USA*
Arthur W. Yount, *1st Lt., MC, USA*

COMMENDATION RIBBON

Albert D. Alexander, *Comdr., DC, USNR*
Elvin D. Arnoldy, *Capt., MSC, USA*
Robert G. Backstrom, *Capt., DC, USA*
Irving H. Bahde, Jr., *2d Lt., MSC, USA*
Robert J. Benford, *Col., USAF (MC)*
Thomas J. Beno, *Capt., MC, USA*
William D. Bilbow, *1st Lt., MSC, USA*
Lloyd F. Brickman, *1st Lt., MSC, USA*
Harold C. Brown, *CWOHC, USN*
John A. Byrd, *Lt. (jg), MC, USN*
Nicholas V. Carroll, *Capt., MSC, USA*
Earle H. Christenson, *Col., USAF (MC)*
Beverly R. Cockrell, Jr., *1st Lt., MC, USA*
Llewellyn W. Cooper, *Lt., MC, USNR*
Philip A. Deffer, *Maj., MC, USA*
Francis A. DeMirza, *Capt., DC, USA*
Robert P. Dobbie, *Lt. (jg), MC, USN*
Robert L. Dow, *Lt. (jg), MC, USN*
Harry B. Eisberg, *Comdr., MC, USN*
Wallace C. Ellerbroek, *Lt., MC, USN*
Bernard H. Fabion, *Capt., DC, USN*
William W. Franklin, *Col., USAF (DC)*
Frederick J. Frese, Jr., *Col., USAF (MC)*
Frank D. Fuller, *Lt., (jg), MC, USN*
John L. Garrett, *Lt., (jg), MSC, USN*
Orville M. Graves, Jr., *Lt., MC, USN*
William H. Gulledge, *Comdr., MC, USN*
Gabriel E. Hargroder, Jr., *1st Lt., MSC, USA*
Grace J. Hayden, *Maj., NC, USA*
Bernard I. Heller, *Maj., USAF (MC)*
Donald D. Hillan, *Lt., MC, USN*
Cecil E. Johnson, *1st Lt., MSC, USA*
Leonard S. Johnston, *Maj., MC, USA*
Stephen G. Kent, *Lt. (jg), MC, USNR*
James F. Kleckner, *Lt., MC, USNR*
Wilbur L. Lehman, *Lt. (jg), DC, USN*
Mason S. LeTellier, *Capt., MC, USA*
George N. Lewis, *Lt., MC, USNR*
Solomon E. Lifton, *Maj., USAF (MC)*
Walter H. Marsh, *2d Lt., MSC, USA*
Robert G. Mays, *Capt., MSC, USA*
Verne W. McClenathen, *Capt., MSC, USA*
Philip S. McGrath, *Lt. (jg), DC, USN*
Donald H. Minkler, *Capt., USAF (MC)*
Thayer K. Morrow, Jr., *Lt. (jg), MC, USNR*
Harold R. Noer, *Lt. (jg), MC, USNR*
Roger W. O'Neill, *Comdr., MC, USN*
Orville K. Owen, *WOHC, USN*
Edward E. Parker, *Lt. (jg), MC, USN*
Albert W. Peterson, *2d Lt., MSC, USA*
Leo E. Potter, *Capt., MC, USN*
Henry Renfert, Jr., *Lt., MC, USNR*
Elliott P. Rigsby, *Lt. Col., USAF (MSC)*
Lloyd C. Rohrs, *Lt. (jg), MC, USNR*
James C. H. Russell, *Capt., USAF (MC)*
Robert T. Schorr, *1st Lt., MC, USA*
Mingo Scott, Jr., *1st Lt., MSC, USA*
Robert E. Smith, *2d Lt., MSC, USA*
William R. Stanberry, *WOHC, USN*
William A. Teipner, *Lt. (jg), MC, USNR*
Clarence G. Veno, *Comdr., DC, USN*
Donald L. Wagner, *1st Lt., MSC, USA*
William H. Walton, *1st Lt., MC, USA*
Joseph M. Ward, *Lt. (jg), MC, USNR*
Arthur M. Wells, *Lt. (jg), MC, USNR*
Herman C. Williams, *CWOHC, USN*
Donald O. Wissinger, *Capt., MC, USN*
James E. Wood, *Capt., USAF (MC)*
Oliver L. Young, *Lt. Comdr., MSC, USN*
Frederick M. Zundel, *Lt. (jg), MC, USNR*

A Message From the A. M. A.

Despite the temporary lull in Selective Service activities, the Council on National Emergency Medical Service is still receiving a substantial number of inquiries concerning the extension of the "Doctor Draft Law" (Public Law 84, 83d Congress) which was enacted on 29 June 1953. In view of this interest, a brief outline of the principle provisions of the law of interest to physicians already on active duty has been prepared for your information.

The measure as passed by the Congress and as signed by the President will:

1. Extend the effective date of the "Doctor Draft Law" until 1 July 1955.

2. Retain the maximum ages specified in existing law: registration, age 50; liability for induction, age 51.

3. Continue in effect the four priorities established by existing law with the following amendments:

(a) All service performed since 16 September 1940 as an officer or as an enlisted man, with certain exceptions which will be outlined later, will be credited as service.

(b) The length of service required to qualify for priority 4 for doctors who were deferred or educated at government expense during World War II is reduced from 21 to 17 months.

(c) Establish the following new periods of service for men recalled to active duty or inducted pursuant to the "Doctor Draft Law":

Previous service	New period of duty
9 months or less	24 months
9 to 12 months	21 months
12 to 15 months	18 months
15 to 21 months	15 months

From the Council on National Emergency Medical Service of the American Medical Association. The views and opinions expressed are not necessarily those of the Department of Defense—*Editor.*

(d) Removes the liability for induction or recall to active duty, except in time of war or national emergency hereafter declared by Congress, for those men in priority 4 who have had 21 months or more of service since 16 September 1940.

4. Define "active duty" and "active service" to include:

(a) Full-time duty in the active service of the United States since 16 September 1940 in the Army, Navy, Air Force, Marine Corps, Coast Guard, or United States Public Health Service, including reserve components.

(b) Time spent during World War II in work of national importance by conscientious objectors.

(c) Service performed before 2 September 1945 in the armed forces of countries which were allies of the United States during World War II.

(d) Service performed as a physician or dentist by United States citizens employed by the Panama Canal Health Department between 16 September 1940 and 2 September 1945.

5. Exclude from consideration as "active duty" periods spent in a Navy V-12 or Army Specialized Training Program; in a military internship, residency or senior student program; in military service for the sole purpose of undergoing a physical examination or while engaged in active duty for training entered into after 29 June 1953.

6. Authorize the appointment of medical officers in grades commensurate with their professional education, experience, or ability.

7. Continue until 1 July 1955 the authority to provide the "special pay" of $100 per month for doctors in the armed services.

8. Authorize the commissioning of noncitizens of the United States as orficers in the armed services.

9. Terminate the reserve commissions of physicians taken into service by operation of the "Doctor Draft Law" at time of separation from active service or within six months thereafter, provided they have served for 12 months or more subsequent to 9 September 1950. Upon completion of this same service medical reservists recalled to active duty will be given an opportunity to resign their commission. Such persons, whether registrants or reservists, shall not be liable thereafter for recall or reinduction except in time of war or national emergency hereafter declared by the Congress.

10. Re-enact the present provisions of law which permit the deferment of those persons who are essential to the national health, safety, and interest.

11. Authorize the national, state, and local medical advisory committees to the Selective Service System, in addition to their present authority, to make recommendations with reference to the deferment of (a) registrants engaged in residency training, (b) those serving on faculties of medical and certain other schools, and (c) those engaged in essential laboratory and clinical research.

12. Extend until 1 July 1955, the authority of the President to recall medical reservists to active duty involuntarily.

13. Be retroactive in effect. Those men already in uniform who would have benefited from the new changes in the law will, upon filing an application, be eligible for release from service as soon as possible and in no event later than 90 days after the effective date of the Act (29 June 1953).

In considering the over-all effect of the new law, it should be noted that the major changes involve greater recognition of prior military service. The result is that a physician, by being able to take advantage of the various new provisions, may either (a) become exempt from liability for service, (b) be placed in a priority less vulnerable to immediate call, (c) be subject to a reduced term of service, or (d) effect a severance of military status within 90 days upon application or after the completion of his period of service by being either discharged or permitted to resign.

First Aid in Civil Defense

Present-day concepts of first aid must be modified if the greatest possible number of injured individuals in a demolished city are to be helped. The training of the first aider should be directed to the important phases of recognizing injury and treating it, and to methods of maintaining morale and self-survival. Particularly, he should know how to manage shock, hemorrhage, fractures, burns, and wounds and the procedures in caring for these should be so thoroughly practiced by him that he cannot forget them under the stress of catastrophe.

—EMIL S. DANISHEK, M. D.
in *Northwest Medicine*,
p. 929, Nov. 1953

Letters to the Editor

EARLY DEVELOPMENT OF ANTI-"G" SUITS

To the Editor:—On page 1714 of the December 1953 issue of the U. S. Armed Forces Medical Journal, in the excellent paper by Dr. John F. Fulton, reprinted from the Journal of the American Medical Association 153: 482-488, Oct. 3, 1953, there appears the following sentence, "The pneumatic pressure suit developed by Captain John Poppen, MC, USN, Prof. F. A. S. Cotton in Australia, and Dr. Harold Lamport in New Haven, Conn., and many others, has served to give measurable and strategically significant protection for military pilots.", which I consider to be in error.

Credit for earlier studies in the effects of acceleration, and for the development of the pneumatic abdominal belt, which was flight-tested and rejected by the Navy in the early thirties as offering inadequate protection, should certainly be assigned to Poppen, but he was not an active participant in the later development and testing of the first Navy-sponsored pneumatic anti-"G" suits in 1941-1942. The two men mainly responsible for the first successful Navy anti-"G" suits were Captain Thomas Ferwerda and the undersigned. I believe that Poppen should have been assigned credit as a contributor to the development of the anti-"G" suit because a modification of his original abdominal belt was incorporated as a component of the two types of anti-"G" suits developed by Ferwerda and myself with the aid of numerous engineering consultants.

Work had begun on the Navy's anti-"G" suits before Dr. Cotton's work came to my attention. I had the privilege of talking with Dr. Cotton when he visited this country, which I believe was late in 1941 or early in 1942. His development was somewhat similar to ours, but was much more cumbersome and employed a system of weights to actuate and to control the inflation. To the best of my available information, it was never given service flight test or acceptance. Neither Ferwerda nor myself knew of Lamport's work, until flight testing of the Navy development was nearing completion.

Leon D. Carson, Captain, MC, USN
First Naval District, Boston, Mass.

(Captain Carson's letter was referred to Dr. Fulton whose reply follows—Editor.)

To the Editor:—I am very pleased that you have allowed me to see the letter of my good friend, Captain Leon Carson, about the early

development of anti-"G" suits. Captain Carson was one of the first to enter the field of active study of anti-"G" devices, as I indicated in my Heath Clark Lectures, *Aviation Medicine in Its Preventive Aspects*, Oxford University Press, 1948, page 141. All of those interested in the field were especially grateful to Thomas Ferwerda who did more flight testing of the different types of anti-"G" suits during the early years of the war than any other flying officer in this country. I am very glad of the opportunity to correct what may perhaps rightly be regarded as a sin of omission.

John F. Fulton, M. D.
Yale University School of Medicine
New Haven, Conn.

Army Specialist Decorated for Nutrition Survey Among Koreans

Lieutenant Colonel Carl J. Koehn, MSC, USA, left, in a recent ceremony was awarded the Army Commendation Ribbon by Colonel W. K. Alston, USA, Commanding Officer of the Chicago Quartermaster Depot, for his work in conducting a nutritional survey of the ROK Army and captured enemy prisoners. Colonel Koehn is liaison officer for the Army Medical Service at the Food and Container Institute of the depot.

Regular Medical Corps Officers Certified by Specialty Boards

American Board of Orthopaedic Surgery

The American Board of Orthopaedic Surgery was organized in 1934 to grant certification to physicians qualified in this specialty. The following 47 regular Medical Corps officers of the military services, according to the respective surgeons general, have been certified by this board:

Robert D. Anderson, *Lt. Col., USA*
John D. Ashby, *Maj., USA*

Thomas S. Barron, *Lt. Col., USA*
Joseph W. Batch, *Col., USA*
George C. Beattie, *Lt. Comdr., USN*
John D. Blair, *Col., USA*
Herbert E. Block, *Lt. Col., USAF*
Robert W. Boal, *Col., USA*
Oral B. Bolibaugh, *Col., USA*
Ernest A. Brav, *Col., USA*
John J. Brennan, *Lt. Col., USA*
Robert S. Brua, *Col., USAF*

Chalmers R. Carr, *Comdr., USN*
John H. Cheffey, *Lt. Comdr., USN*

Ernst Dehne, *Lt. Col., USA*
Alvis B. Dickson, *Lt. Comdr., USN*

Alfred A. Grebe, *Col., USA*
William H. Gulledge, *Comdr., USN*

Alfred O. Heldobler, *Maj., USA*

Vinnie H. Jeffress, *Col., USA*
Henry M. Johnson, *Lt. Col., USA*

Frank P. Kreuz, *Capt., USN*

Robert F. Legge, *Capt., USN*
William B. Lewis, Jr., *Lt. Col., USAF*

Ernest C. Lineberger, *Lt. Col., USA*

Herbert A. Markowitz, *Comdr., USN*
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George G. McShatko, *Col., USA*
John W. Metcalfe, *Comdr., USN*
Walter R. Miller, *Capt., USN*

Douglas E. Ramsey, *Lt. Col., USAF*
Oscar S. Reeder, *Col., USAF*
Ralph E. Reiner, *Col., USA*
Sterling J. Ritchey, *Lt. Col., USA*
William C. Roland, *Comdr., USN*
Carl M. Rylander, *Col., USA*

Albert W. Shiflet, *Col., USA*
August W. Spittler, *Col., USA*
Clifford A. Stevenson, *Comdr., USN*
William S. Stryker, *Comdr., USN*

Lloyd W. Taylor, *Lt. Col., USA*
John S. Thiemeyer, Jr., *Comdr., USN*
Milton S. Thompson, *Col., USA*

Victor B. Vare, Jr., *Lt. Col., USA*
Winston H. Vaughan, Jr., *Col., USA*

Howell E. Wiggins, *Comdr., USN*

Thomas D. Yocum, *Comdr., USN*

This is the sixth of a series. The names of officers certified by the American Board of Radiology will be published in the April issue.

Publications by Officers of the Medical Services

Appel, S. B., Maj., MC, USA; Gluck, J. L., First Lt., MC, AUS; Schlecker, A. A.; Miller, A.; Reichman, S.; Springer, C.; Goldman, A., First Lt., USAF (MC); Rosenbluth, M. B.; and Kupperman, H. S.: Comparative effect of adrenocorticotrophic hormone extracts on blood glucose in man. *Acta endocrinol.* 14: 99-107, 1953.

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Bancroft, C. E., Lt., MC, USN, and Baker, W. S., Jr., Comdr., MC, USN: Surgical relief of dysmenorrhea produced by hematometra in rudimentary horn of uterus bicornis unicollis; report of one case. *Am. J. Obst. & Gynec.* 66: 1348-1350, Dec. 1953.

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Crosby, W. H., Lt. Col., MC, USA: Hemolytic states. *Bull. New York Acad. Med.* 30: 27-42, Jan. 1954.

Diggs, L. W., and Vorder Bruegge, C. F., Lt. Col., MC, USA: Vascular occlusive mechanisms in sickle cell disease. *J. Nat. M. A.* 46: 46-49, Jan. 1954.

Edlin, P., Capt., USAF (MC), and Sullivan, B. H., Jr., Lt. Col., MC, USA: Acute pancreatitis. *Am. J. Digest. Dis.* 20: 384-389, Dec. 1953.

Goyette, E. M., Col., MC, USA; Overholt, E. L., Maj., MC, USA; and Rapaport, E., Capt., MC, AUS: Treatment of tuberculous pericarditis. *Circulation* 9: 17-21, Jan. 1954.

Gregory, L., Capt., MC, USA; Damiani, ...; Johanson, M.; Ormsby, A.; and Ruskin, A.: Experiences with tetraethyl ammonium chloride in bronchial asthma. *Dis. Chest* 24: 655-662, Dec. 1953.

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Kahn, B. I., Comdr., MC, USN, and Jordan, R. L., Lt. (jg), MC, USNR: Paternal domination as cause of somnambulism. *Calif. Med.* 80: 23-25, Jan. 1954.

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Love, L., Capt., MC, USAR, and King, J. C., Capt., MC, USAR: Spontaneous pneumothorax complicating pneumonia. *Ann. Int. Med.* 40: 153-160, Jan. 1954.

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Palmer, E. D., Lt. Col., MC, USA: Chronic superficial gastritis; observations on clinical and histopathologic significance. *Am. J. Digest. Dis.* 20: 369-372, Dec. 1953.

DEATHS

ALLEN, Denver Irving, Major, MSC, USA, Brooke Army Medical Center, Tex.; graduated from University of Missouri in 1942; commissioned a first lieutenant in 1942; died 20 January 1954, age 40, of coronary thrombosis, in San Antonio while attending the Medical Service officer advance course at the Medical Field Service School.

BRENSINGER, William Josiah, Lieutenant Colonel, MC, USA, Letterman Army Hospital, San Francisco, Calif.; graduated from Temple University School of Medicine in 1943; ordered to active duty 9 April 1946; died 12 December 1953, age 34, of intracerebral hemorrhage.

DOTSON, Robert Lewis, Second Lieutenant, MSC, USAR, Camp Carson, Colo.; graduated from Southwestern State College in 1951; commissioned a second lieutenant on 8 November 1952; died 6 December 1953, age 24, of hemorrhagic fever on board USNS *Marine Serpent* en route from Korea to continental United States.

LARAMORE, Henry Hugh, Lieutenant Commander, MSC, USN; Military Sea Transportation Service, Seattle, Wash.; entered naval service 7 June 1928; appointed warrant pharmacist on 26 March 1942; commissioned lieutenant commander in March 1949; died 19 January 1954, age 43, at the U. S. Naval Hospital, Bremerton, Wash.

ORKEN, Gerald Arnold, Major, USAF (MC), U. S. Air Force Dispensary, 6319th Air Base Wing, Guam; graduated from Vanderbilt University School of Medicine in 1946; ordered to active duty 22 June 1949; died 18 December 1953, age 31, at the U. S. Naval Hospital, Guam, of injuries received when a disabled aircraft struck his quarters. His wife and two children died in the same accident.

SHORR, Harold Michael, Major, MC, USAR, 3461st Medical Detachment, Camp Rucker, Ala.; graduated from New York University College of Medicine in 1941; ordered to active duty 1 July 1953; died 15 December 1953, age 36.

BOOK REVIEWS

THE SURGERY OF INFANCY AND CHILDHOOD, Its Principles and Techniques, by *Robert E. Gross*, M. D., D. Sc. 1,000 pages; 1,488 illustrations on 567 figures; drawings by *Etta Piotti*. W. B. Saunders Co., Philadelphia, Pa., 1953. Price $16.

Since the publication of "Abdominal Surgery of Infancy and Childhood," by Ladd and Gross in 1941, surgeons have used that book as a guide and ready reference for the management of infants requiring surgical intervention. Although it served its purpose for many years, the steady progress in surgery of infants and children created a need for a single volume that would encompass the entire field of pediatric surgery, including thoracic as well as abdominal surgery. This current monograph on "The Surgery of Infancy and Childhood" has accomplished this purpose and presents, factually and concisely, the principles and technics of surgery of childhood which have been developed on the basis of years of experience by the staff of the Children's Hospital, Boston. Their carefully documented data, covering a broad field of surgical experience, has made it possible for the author to draw sound conclusions on which to base his recommendations for surgical management.

The object of this book is, first, to describe the types of cases which have been treated, to evaluate the surgical procedures employed, and to determine which procedures produced the best results so as to improve the surgical service at Children's Hospital; secondly, to make available to the medical profession the information which he has obtained on the care of infants and children.

The book contains 69 chapters, covering special fields of surgery which are peculiar to infants and children. The subject matter is presented in a readable and interesting style, and the text is supported adequately by illustrations and figures. There are many excellent drawings by Etta Piotti. The book has an excellent index and there is an individual bibliography at the end of each chapter.

This work is the outstanding contribution to the literature of surgery of infants and children. The author and his associates deserve great credit for making available to the medical profession the wealth of their experience. This book should be read by all physicians engaged in pediatric medicine and surgery.

—D. B. KENDRICK, *Col., MC, USA*

THE INSIGHT TEST, A Verbal Projective Test For Personality Study, by *Helen D. Sargent*, Ph. D. 276 pages. Grune & Stratton, Inc., New York, N. Y., 1953. Price $6.75.

This book describes a projective method for the clinical study of personality. The first part of the book deals with personality theory, the test materials and their administration, the principal response dimensions and their scoring, and problems of interpretation. The second part provides illustrative protocols obtained from patients diagnosed as having schizophrenia, paranoia, hysteria, and obsessive-compulsive neurosis. The remaining pages include tables of normative data and the test materials themselves.

The stimulus materials of the insight test are problem situation outlines to which the subject responds by telling what the leading characters did, why they did it, and how they felt about it. The author assumes that these responses reflect the needs, attitudes, feelings, and modes of problem solving characteristic of the subjects undergoing assessment. The items were devised originally to cover six arbitrarily chosen areas of conflict: family, opposite sex, social and friendship relations, vocation, religion, and health. Other items are used from time to time in dealing with special problems. The test is available in eight forms—two long ones and two short ones for each sex. It is designed for administration in either oral or written form, and its completion ordinarily requires about an hour. A skilled examiner can score, tabulate, and interpret the results in about 45 minutes.

Satisfactory rules for the achievement of objectivity in scoring and interpretation have not yet been devised. Hence, the quality of interpretation is said to depend upon clinical judgment and the "feel" which the skilled examiner acquires. A few psychometric studies of validity and reliability are reported, but these are based on small samples in which the distinguishing criteria are not very precise. Despite this, the available evidence warrants further effort along these lines. The author of the test seems refreshingly aware of these limitations when discussing the psychometric studies, but when she permits the reader to see her at work on the test productions of selected cases, the interpretations often seem to outrun the evidence at hand. Diagnostic signs are seen everywhere; nothing goes unnoticed. For example, scoring difficulties per se suggest new inferences. Discrepant findings are often more significant than agreements. Occasionally one may be scored for what he does not produce as well as for his actual productions. Overproductions, however, are distressful because there are no norms. If a patient objects to the test, it seems possible for the examiner to abandon the test materials altogether, wringing the interpretation from the objection itself. Perhaps this is what is meant by the acquisition of "feel," a concept admittedly difficult to communicate. The flavor of the whole procedure is strongly psychoanalytic.

—R. B. PAYNE, *Maj., USAF (MSC)*

ROENTGEN DIAGNOSIS OF THE HEART AND GREAT VESSELS, by *Erich Zdansky*, M. D., translated by *Linn J. Boyd*, M. D. 1st American edition; new enlarged revision. 499 pages; illustrated. Grune & Stratton, Inc., New York, N. Y., 1953. Price $15.50.

This well-illustrated volume from the University of Vienna on the roentgen features of the cardiovascular system presents a different approach than the standard American texts on the subject. Reproductions of roentgenograms, most of which are accompanied by line drawings illustrating their features, are excellent and follow the trend of European texts in using reversal of the color values of the roentgenogram.

The section on the normal heart, which includes the physiology and dynamics, as well as anatomy of the heart, is excellent. The discussion of the effects of exercise and the so-called "athletes heart" is more complete than that usually found on this subject.

Pathologic cardiac conditions found in pure and combined valvular lesions are logically discussed from the radiologic findings. Discussion of congenital anomalies and vascular lesions is complete and includes an especially good coverage of congenital anomalies of the aorta. The remainder of the cardiovascular system including the lesser circuit in cardiovascular disease is adequately considered. Cardioangiographic and cardiac catheterization findings are given in connection with the disease process in which they helpful.

This is a good reference work for the radiologist, cardiologist, and internist.—H. R. OSHEROFF, *Col., MC, USA*

QUANTITATIVE PHARMACEUTICAL CHEMISTRY, by *Glenn L. Jenkins*, Ph. D.; *John E. Christian*, Ph. D.; and *George P. Hager*, Ph. D. 4th edition. 534 pages; illustrated. McGraw-Hill Book Company, Inc., New York, N. Y., 1953. Price $6.50.

This publication is primarily designed for academic use by students or instructors, but certain subject material and essential procedures it contains make it also of value to the analyst. The book is divided into three parts: the general methods which cover basic analytical procedures, such as volumetric, gravimetric, and gasometric procedures; the special methods which include description of procedures concerned with specific analytical procedures as the assay of volatile oils, alkaloidal assaying, and assay of enzyme containing substances; and the physicochemical methods applicable to pharmaceutical analysis such as specific gravity, pH, colorimetry, spectrophotometry, fluorophotometry, nephelometry, turbidimetry, viscosity measurements and electrolytic methods. The 126 typical procedures, 75 tables included, have been revised to conform with the *United States Pharmacopoeia* (14th revision) and the *National Formulary* (9th edition).

This book should be of interest to instructors and students of pharmaceutical chemistry, and, to a lesser degree, to those similarly concerned with pharmacy.—W. H. LEE, *Maj., USAF (MSC)*

SURGERY OF THE BILIARY TRACT, PANCREAS AND SPLEEN, A Handbook of Operative Surgery, by *Charles B. Puestow,* M. D., Ph. D. (Surg.). 370 pages; illustrated by *Jessie W. Phillips.* The Year Book Publishers, Inc., Chicago, Ill., 1953. Price $9.

This book is a readily available review of the salient problems encountered in the approach to and execution of the technical procedures outlined and of the related sciences and clinical experiences to alert the surgeon and crystallize his thinking. The subtitle, "A Handbook of Operative Surgery," may be somewhat misleading as it implies that the reader possesses a better than average familiarity with the subject matter and may not use such a text to acquire experience in unfamiliar fields.

Each of the four subdivisions is prefaced by a succinct review of the anatomy and physiology of the part. Surprisingly few surgical problems have been omitted and most diseases and procedures are graphically portrayed by accompanying drawings which add to the value of the book. This volume should be popular with all general surgeons and should be made available to all residents in this field.

—J. R. SHAEFFER, *Col., MC, USA*

TREATMENT OF TOXIC GOITER WITH RADIOACTIVE IODINE, by *Lindon Seed,* M. D., and *Theodore Fields,* M. S. American Lecture Series, Publication Number 197, A Monograph in American Lectures in Endocrinology, edited by *Willard O. Thompson,* M. D. 116 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $3.75.

The title of this monograph falls short of indicating the scope of the information it includes. The preface by Dr. George U. LeRoy testifies to the authors' wide experience in the use of I_131 and suggests that an appropriate title would be: "What Every Physician Should Know About Treating Hyperthyroidism with Radioiodine."

The authors properly devote a chapter to a brief historical review and then discuss the nature of radioactivity and its measurement and standards, the metabolism of thyroid hormone in relation to the circuit of radioactive iodine, and the methods of determining uptake of radioactive iodine by the thyroid gland. In presenting the calculation and estimation of therapeutic dosage of I_131, both the mathematical and clinical formulas are presented, and the unavoidable inaccuracy of such determinations is discussed. It is evident that considerable experience with I_131 therapy is necessary in calculating dosage for the individual patient. Reports of the treatment of toxic goiter with radioactive iodine in 1,720 cases in the literature from 1949 to 1952, as well as on 257 patients treated by the authors and followed for from six months to two years, are included.

The volume has an excellent bibliography of 116 references, and the index is complete, including the authors mentioned in the text. Although more space should have been devoted to discussion of the clinical indications for the use of radioactive iodine, the book is well worth owning.—R. VOLK, *Comdr., MC, USN*

MOTHER AND BABY CARE IN PICTURES, by *Louise Zabriskie,* R. N. 4th edition. 244 pages; 255 figure numbers and 11 tables. J. B. Lippincott Co., Philadelphia, Pa., 1953. Price $3.

This new edition has been entirely revised, with many additions, changes, and new illustrations, to meet the current trends in mother and baby care. It should prove valuable both to new and prospective parents, especially to the woman expecting her first baby. The material is excellently presented in a nonscientific and comprehensive manner, and is well written, accurate, and up to date. The information given on the most recent advances in infant and child care may be easily understood by any parent.

The illustrations are appropriate and well done. Deserving special note is the simple explanation, with illustrations, of the Rh factor. The pictures showing the mechanisms of labor and actual process of birth may be frightening, however, especially to the new mother. Detailed, illustrated directions are given for bathing, dressing, and handling the baby. The author answers the many questions that mothers want to know in a reassuring manner, and by so doing should eliminate numerous unnecessary phone calls to the doctor.

While the book is written primarily for parents, it should adapt easily and readily to the needs of practical nurses, and is an excellent reference book for all nurses. —R. V. O'NEIL, *Lt. Comdr., NC, USN*

THE CONQUEST OF PLAGUE, A Study of the Evolution of Epidemiology, by *L. Fabian Hirst,* M. D., with a foreword by Lieutenant General Sir *William MacArthur,* K. C. B., M. D., F. R. C. P. 478 pages; illustrated. Oxford University Press, New York, N. Y., 1953. Price $11.

This book is neither a definitive textbook, nor a history of plague epidemics. The subtitle is a better clue of its contents which deal broadly with the evolution of man's concepts of the nature of plague. In this sense it is a facet of the evolution of the science of epidemiology, and in essence is a study of human beliefs about the origin of the malady from primitive eras to the international control of plague and the advent of antibiotic therapy.

The book is divided into four parts. The first part deals with the primitive concepts of the disease. The second is a summary of modern research as to the nature of plague. The third is a discussion of the epidemiologic implications of geography, ecology of fauna, in particular the rat flea, in the spread of bubonic plague. The final part deals with international and national control measures and the prevention of plague as well as modern treatment of the disease. Each section is followed by an excellent bibliography.

This book is written in facile style and will be of interest not only to the professional person, but also to the intelligent layman. It avoids involved technical discussions, even in quotations from the technical literature, and is interestingly illustrated and well indexed.

—A. J. RAPALSKI, *Col., MC, USA*

THE YEAR BOOK OF GENERAL SURGERY (1953-1954 Year Book Series), edited by *Evarts A. Graham,* A. B., M. D., with a section on anesthesia, edited by *Stuart C. Cullen,* M. D. 590 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1953. Price $6.

In this book Dr. Graham continues his annual editorial custom of presenting a world-wide selection of abstracts of outstanding papers on general surgery, anesthesiology, and related subjects, which have been published within the preceding year. Articles on the same subject are grouped together for easy and quick reference. The 454 abstracts are well written, and contain all important and salient points. Many of them are accompanied by excellent diagrammatic illustrations. In addition, the editor has, at the end of many of the articles, parenthetically indicated his own views on the material presented, particularly where he believes that some point needs to be emphasized, or perhaps where a word of caution is needed.

This book will be of especial interest to all engaged in these special fields and to those working in research in the basic surgical sciences. One of the volume's greatest advantages is that it affords the reader access, in condensed, time-saving form, to the best material published throughout the world. The editor is to be commended for his annual contribution of this book which has consistently, over the years, been of such great value to all physicians in the field of surgery.— D. R. SEWELL, *Col., USAF (MC)*

COLLECTED PAPERS OF THE MAYO CLINIC AND THE MAYO FOUNDATION, edited by *Richard M. Hewitt,* M. D.; *A. B. Nevling,* M. D.; *John R. Miner,* Sc. D.; *James R. Eckman,* Ph. D.; *M. Katharine Smith,* B. A.; *Carl M. Gambill,* M. D., M. P. H.; *Florence Schmidt,* B. S. E.; and *George G. Stilwell,* M. D. Vol. XLIV, 1952, published June, 1953. 786 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., 1953. Price $12.

This volume is the latest of a series containing articles which have for the most part appeared previously in various medical periodicals, and which represent only a portion of the literature produced by the Mayo Clinic during the course of a year. Some are printed in their entirety and others appear in abbreviated form. The papers are grouped according to subject matter, and it is noted that there is a marked variation numerically amongst the various subheadings. As an example, while there are 35 papers concerning the alimentary tract, there are only four under the heading of "Skin and Syphilis."

The general level of the articles offered is high in interest and readability. While the majority are of the review type and cover some specific phase of the subject chosen, a few present recent advances in therapy and diagnosis, or the results of current clinical investigation. The general subjects of antibiotics and cortisone are particularly well covered and articles on these subjects appear under several of the topic headings. There is an excellent group of articles concerning the diagnosis and treatment of headache, and mention should be made of those concerning gastric malignancy and of the single article by Mark B. Coventry on the problem of the painful shoulder.

While this volume is not meant to serve as a general reference, it will be found useful to the general practitioner, the diagnostician, and the general surgeon as a convenient source of information concerning methods in use by one of the large clinics of this country. The volume will also be of interest to those whose practice is limited to some of the more restricted specialties.—J. E. GORMAN, *Comdr., MC, USN*

FUNDAMENTALS OF BIOCHEMISTRY IN CLINICAL MEDICINE, by *Niels C. Klendshoj*, M. D. 276 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $7.75.

As stated in the introduction, this book should not be considered as a reference work, but one that permits a reader in another field to obtain a brief review of the subject. Even bearing this purpose in mind, it appears that too frequently a fundamental concept has been simplified to the point where the amount of useful information presented is overly limited. The style is informal and the author wanders freely from biochemistry to physiology and on to clinical medicine, in correlating concepts. Although this book is brief, it would seem that in seven chapters devoted to fundamentals of biochemistry the field of intermediary metabolism, including tricarboxylic acid cycle, coenzyme A, et cetera, would merit more emphasis. The inclusion of such topics as the biochemistry of vision and intracellular localization of biochemical functions would help bring the practitioner up to date in the vast, expanding field of biochemistry. The clinical portion of the book is divided into four chapters on endocrine organs and one chapter each on the liver, the kidneys, bone disorders, the nervous system, and nutrition. A supplementary bibliography follows each chapter.
—B. W. AGRANOFF, *Lt., MC, USNR*

LIVING WITH A DISABILITY, by *Howard A. Rusk*, M. D., and *Eugene J. Taylor*, in collaboration with *Muriel Zimmerman*, O. T. R., and *Julia Judson*, M. S. 207 pages; illustrated. The Blakiston Co., Inc., Garden City, N. Y., 1953. Price $3.50.

This book is distinguished by reason of its authors who are known for presenting, interpreting, and solving the problems of the physically handicapped person. Written with human interest and warmth, the book presents concrete instructions on the art of living with a disability at home, at play, or at work. It is the first book for the physically handicapped and their families which presents information in a convenient, concise and graphic form. It describes aids and approved methods for accomplishing activities of daily living such as communication, dressing, eating, and travel; homemaking, work, and other vital functions are described with clarity and detail. The book will prove helpful and interesting to doctors, nurses, and ancillary groups interested in the problem of physical rehabilitation. It is likewise a source of inestimable help and hope to the severely disabled and handicapped, and opens to them new opportunities for physical independence by self-help through special arrangements, appliances, devices, and ingenious technics now available.—J. H. KUITERT, *Lt. Col., MC, USA*

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SALMONELLAE AND SHIGELLAE, Laboratory Diagnosis Correlated With Clinical Manifestations and Epidemiology, by *Alfred J. Weil,* M. D., and *Ivan Saphra,* M. D. 247 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $7.75.

This book comprises a very complete presentation of the diagnostic procedures necessary for isolation, cultivation, and identification of bacteria of the salmonella and shigella groups. Primary emphasis necessarily rests on description and interpretive discussion of approved laboratory methods; however, the authors' treatment of the biologic position of these genera in relation to the other enterobacteriaceae furnishes sufficient basic information on physiologic processes and immunological behavior to provide an adequate technical background for thorough understanding of the laboratory manipulations described.

Extensive coverage is given of general biologic and immunological properties of these organisms, and the laboratory methods are explicit and easily followed by the reader. Such extremely complex phenomena as the antigenic variation encountered in these genera are discussed fully, yet in simple and effective terms. Frequent citation of practical approaches to the problem of culture identification reflects the authors' extensive experience with these bacteria. The 35 tables and 14 illustrations summarize concisely much of the material presented in the text, and the bibliography cites extensively from the publications of outstanding workers in the field.

This book has considerable merit as supplementary reading material for students of bacteriology. It has unusual value as a laboratory aid for those workers whose activities entail frequent or regular encounter with the salmonellae and shigellae.—F. L. DAVIS, *Capt., USAF (MSC)*

CLINICAL ORTHOPAEDICS, No. 2, by *Anthony F. DePalma,* Editor-in-Chief, With the Assistance of Five Associate Editors and a Board of Six Advisory Editors. 247 pages; illustrated. J. B. Lippincott Co., Philadelphia, Pa., 1953. Price $6.

The purpose of this text, to present significant contributions to the advancement of surgical knowledge from original articles by various authors throughout the country, is successfully accomplished. The subject matter is divided into two sections. The first section, intramedullary nailing, is well presented and covers the complications and errors, technic, infections, and use of intramedullary fixation. It is pointed out that this procedure should not be used by unskilled surgeons because many pitfalls might be overlooked by inexperienced surgeons.

The second section is on general orthopedics and has nine chapters, including chapters on arthritis, bone grafting, and bone tumors, as well as other general orthopedic problems. This book is of value for orthopedic residents, as well as orthopedic surgeons.

—R. E. REINER, *Col., MC, USA*

NASH'S SURGICAL PHYSIOLOGY, edited by *Brian Blades*, M. D. 2d edition. 686 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $12.50.

The purpose of this volume is to present simply and briefly those aspects of physiology which are of greatest importance in surgery. It accomplishes this effectively by presenting in a practical manner the basic physiology of interest to the student and surgeon. There are chapters on the circulatory system, the physiology of burns and tissue repair, the respiratory system, mechanics and control, the gastrointestinal system, vitamins in surgery, the physiology of body fluids and acid base balance, the kidneys, the endocrine glands, and the nervous system.

The subjects are well covered and most chapters are followed by an excellent bibliography. The indications for splenectomy set forth by the author are fewer than generally accepted by the profession. Although it is realized that not everything can be covered in any one volume, it is considered that the value of the section on nutrition and fluid balance would have been enhanced by inclusion of the Evans blue test, and that of the section on the thyroid by inclusion of the protein bound iodine test as an index to the function of the thyroid.

The general excellence of the work makes it difficult to select portions for special comment, but the chapters on shock, respiration, nutrition, body fluids, and acid-base balance are particularly good. This book is recommended to students, interns, residents, and surgeons for practical physiology upon which to base their surgical care of patients.

—E. S. LOWE, *Capt., MC, USN*

AN ATLAS OF SURGICAL EXPOSURES OF THE EXTREMITIES, by *Sam W. Banks*, M. D., and *Harold Laufman*, M. D., Ph. D. 391 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., publishers, 1953. Price $15.

The authors of this excellent volume have succeeded in producing a comprehensive descriptive atlas of surgical exposures of the extremities. The subject matter is divided into 11 sections, each dealing with the commonly used approach to a distinct region of the body. Each approach is succinctly described in outline form, with emphasis on the points at which vital structures are likely to be placed in jeopardy. Of the 374 pages making up the book, 176 are halftone plates to depict the important steps described in the text. The drawings have been well executed. Because they were made from anatomical specimens, the fault of appearing schematic and misleading the unfamiliar surgeon is avoided. The book is well bound and is printed on high quality glossy paper, so that it is both attractive and easily read.

Inasmuch as comparable works in most instances do not meet the high standard represented by this volume, it should prove to be a very welcome addition to all medical libraries.

—J. H. CHAFFEY, *Comdr., MC, USN*

HYPERPARATHYROIDISM, by *B. Marden Black,* M. D. American Lecture Series, Publication No. 173, A Monograph in American Lectures in Endocrinology; edited by *Willard O. Thompson,* M. D. 119 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $3.75.

The author's wide experience with this clinical problem is well expressed in his comprehensive and yet condensed presentation. Thorough consideration is given to the pathology, clinical aspects, diagnosis, differential diagnosis, treatment, and surgical procedures, including postoperative course and management of complications, of this potentially fatal disease. Special emphasis is placed on careful medical evaluation of hypercalcemia to rule out nonsurgical, clinically similar, disease states involving calcium-phosphorus metabolism. The surgical technic involved in cervical dissection and in mediastinal exploration when indicated is especially well stated, as is the management of the uncomplicated as well as the complicated postoperative course. A total of 19 figures, including excellent microscopic pathology, diagnostic roentgenograms, and surgical illustrations, adds to the completeness of this 93 page monograph. The bibliography consists of 112 references.

Dr. Black's monograph represents a very worth-while addition to the present library of medical publications concerned with hyperparathyroidism and related diseases of calcium metabolism.

—A. ZIKMUND, *Capt., MC, USN*

MECHANISMS OF UROLOGIC DISEASE, by *David M. Davis,* M. D. 156 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., 1953. Price $4.50.

This book was prepared from a modified and expanded syllabus originally begun as a series of introductory lectures to third-year students at Jefferson Medical College. The author, a noted authority and teacher of urology, has organized the material in this small volume on the basis of physiologic and pathologic processes involved in this specialty rather than on an anatomic basis, as is generally true in other textbooks of urology.

The subject matter is covered under the eight headings of obstruction, infection, stone formation, neoplasm, congenital malformation, trauma, foreign body and neurogenic changes. This concept of urologic disease is proper and more truly explains the development of pathologic changes. There are, in addition, short chapters on infertility, lesions of the external genitalia, catheterization and history taking. An excellent list of reference books is appended. The author's concepts of the cause and treatment of pyelonephritis and chronic prostatitis merit the consideration of all physicians.

This volume is an outstanding contribution to medical literature. It is intended primarily for the medical student and nonurologist, but can and should find a place in the library of every specialist in genitourinary diseases.—J. W. SCHWARTZ, *Col., MC, USA*

DISABILITY EVALUATION, Principles of Treatment of Compensable Injuries, by *Earl D. McBride,* M. D. 5th edition. 715 pages; 375 figure numbers. J. B. Lippincott Co., Philadelphia, Pa., 1953. Price $15.

This is the fifth edition of a standard reference text and its purpose as before is "to interpret the physiological and mechanical alterations arising out of injury to the motor structures of the human body, and to reasonably appraise and evaluate the extent of functional loss as it relates to the economic incapacity of the injured."

The author has found the need to review previous editions through his wide experience in teaching and writing on the subject of disability evaluation. This edition contains many improvements. The discussion of the causal relation of injury to disease is timely, and of interest and importance to those faced with the necessity of expressing an opinion on such matters. Although not lengthy, this section is well referenced. The rating schedules have been improved and enlarged.

This text is considered a necessary part of the reference shelves of orthopedists and industrial surgeons. It is of value to all medical officers of the armed services who are concerned with clinical and physical evaluation boards.—A. B. DICKSON, *Lt. Comdr., MC, USN*

PLANNING GUIDE FOR RADIOLOGIC INSTALLATIONS, by the *Committee on Planning of Radiologic Installations of the Commission on Public Relations of the American College of Radiology; Wendell G. Scott,* M. D., Chairman. 336 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1953. Price $8.

This committee report covers such important topics as design and arrangement of rooms, ventilation and air-conditioning, dark-room planning, film identification, radiation protection, and design of isotope and radium laboratories. Each subject is discussed by a known authority in the field. No attempt is made to reproduce typical floor plans, but the basic principles of space and patient flow are thoroughly outlined so that departments of any size can be planned with ease.

The illustrations are adequate and clearly captioned to complement the well written text. Nearly one third of the book is devoted to the reproduction of three National Bureau of Standards Handbooks (No. 41, Medical X-ray Protection Up to Two Million Volts; No. 50, X-ray Protection Design; and No. 54, Protection Against Radiation From Radium, Cobalt-60 and Cesium-137). The first two are available from the Government Printing Office, and the latter is a final draft of a handbook which will be released in late 1954.

This book will be of importance to those physicians who are concerned with the construction or remodeling of radiology departments in clinics and hospitals.—E. M. DeYOUNG, *Col., MC, USA*

RENAL FUNCTION, Transactions of the Fourth Conference, October 22, 23, and 24, 1952, New York, N. Y., edited by *Stanley E. Bradley*, M. D. 189 pages; illustrated. Sponsored by the *Josiah Macy, Jr. Foundation*, New York, N. Y., 1953.

This volume is a record of the transactions of the fourth of a series of five annual conferences on renal function sponsored by the Josiah Macy, Jr. Foundation in an attempt to stimulate research and promote effective communication across the departmental walls which tend to isolate the professions and specialties from one another. The conference program is designed to further knowledge in a particular field, i. e., renal function, and to this end the participants were brought together to exchange ideas, experiences, data, and methods. Scientific investigators in all phases of renal function were represented. In the group were physiologists, anatomists, biochemists, internists, pediatricians, pathologists, and others. The booklet attempts to preserve the informality of the conference discussions.

For the average clinician this book is not recommended because discussions are highly technical and difficult to follow clearly. To the scientist doing research work in renal function, however, this report should be invaluable. Complete references are given at the conclusion of each of the four phases of renal function, thus the reader has ample opportunity to study more thoroughly the points brought out during the conference discussions.

—*Col. R. T. Artman, MC, USA*

DIABETIC CARE IN PICTURES, Simplified Statements with Illustrations Prepared for the Use of the Patient, by *Helen Rosenthal*, B. S., and *Joseph Rosenthal*, M. D. 2d edition. 164 pages; 128 original illustrations (including 7 in color). J. B. Lippincott Co., Philadelphia, Pa., 1953. Price $3.

This second edition of a book designed for use by the diabetic patient incorporates the latest concepts of the control of diabetes. Its purpose is to present a simplified explanation of diabetes and its treatment, and to dispel the fears of the patient. The author makes full use of visual aids in explaining the planning of the diet and the administration of insulin. The illustrations follow directly after the written description, the caption under each illustration being taken verbatim from the test.

One major inclusion is a discussion of neutral protamine Hagedorn insulin, including a simplified description of its action and an explanation of when it should be used. Dietary exchanges, including charts and illustrations, are fully covered. The visual presentation of how to prepare and administer insulin and test the urine will prevent misinterpretation of instructions by the patient. Insulin reactions, acidosis, care of skin injuries, skin infections, personal hygiene, and care of hands and feet, including Buerger-Allen exercises, are explained in language and with pictures that the uneducated patient can understand.

This is the type of book that every diabetic patient should read and keep for ready reference. Such a simplified version might be boring to the physician but, if he examines it with the idea that it is primarily for the use of the patient, he will discover that it will save him invaluable time in explanations that are essential for ideal control of the diabetic patient. There is no bibliography, but the index is adequate.

—E. P. McLARNEY, *Capt., MC, USN*

PROGRESS IN NEUROLOGY AND PSYCHIATRY, An Annual Review, Vol. VIII, edited by *E. A. Spiegel*, M. D. 591 pages. Grune & Stratton, Inc., New York, N. Y., 1953. Price $10.

This review endeavors to encompass in a single volume the yearly literary output in psychiatry, neurology, the basic sciences of neuroanatomy, neurophysiology, neuropathology, and neurosurgery. The title appears inaccurate because most of the material covered does not truly represent progress in the respective fields, but is rather an effort to acquaint the reader with current reports of basic research and clinical investigation pertinent to psychiatry and neurology.

In general the book succeeds admirably in fulfilling the function for which it was intended. Its 36 chapters are each written by authoritative clinical or research workers. The editor has incorporated these contributions in a coherent presentation of the current status of the particular area under consideration. Several contributors make the common error of attempting to cover many published reports without a critical evaluation of the content or proper integration for the average reader. Each chapter contains an excellent bibliography that should prove invaluable for interested clinicians and research workers.

The volume is highly recommended to the busy practitioner of psychiatry or neurology who finds it difficult to maintain contact with the current literature in his special sphere. It is especially valuable for the psychiatrist who needs constant awareness of progress in neurophysiology and neuroendocrinology in order to balance a purely psychologic concept of behavior.

—*Col. A. J. Glass, MC, USA*

PICTORIAL INTRODUCTION TO NEUROLOGICAL SURGERY, by *G. F. Rowbotham* and *D. P. Hammersley*. 108 pages; illustrated. The Williams & Wilkins Co., Baltimore, Md., 1953. Price $4.50.

This short but interesting volume was elaborated by a British neurological surgeon and an artist in a pictorial attempt to acquaint surgeons in outlying communities with procedures designed to care adequately for cerebral trauma. It covers the essentials of positioning, flap designs, methods of hemostasis, and instruments and their usages. There are excellent drawings on handling

small cortical excisions, and even on simple methods of plastic repair of scalp defects. Débridement of wound tracts, elevation of depressed fractures, and repair of torn sinuses are also demonstrated. The authors adhere closely to the facts, omitting superfluous material, and the artist has done an excellent job once the book gets beyond positioning and flaps, where special efforts are unnecessary.

While it may be an accepted practice in England for general surgeons to attempt surgical treatments of rhinorrheas and otorrheas, and to excise cortical scars, the reviewer believes this is an ill-advised activity in this country, where such procedures are usually the province of the neurological surgeon. Nevertheless, the book is a concise and handy volume, which should be of considerable value to the general surgeon in any community where a neurological surgeon is not available.

—R. W. GARRITY, *Capt., MC, USN*

A PRIMER OF CARDIOLOGY, by *George E. Burch*, M. D. 2d edition. 339 pages; with 214 illustrations. Lea & Febiger, Philadelphia, Pa., 1953. Price $5.50.

This short volume, consisting of five chapters and an appendix, is an introduction to cardiology. The first and last chapters, on anatomy and arrhythmias, respectively, are adequate although each consists of only 30 pages. The second chapter presents the signs of organic heart disease and concepts of heart failure and edema. The third and fourth chapters cover auscultation of the heart in detail and summarize the principal types of heart disease, giving short notes on their treatment. The appendix contains useful tables and diet lists.

Questionable sections include the listing of the following as dependable signs of organic heart disease: (1) generalized senile arteriosclerosis, (2) hyperthyroidism of several months' duration, (3) myxedema, and (4) severe anemia of several weeks' duration. It is misleading to state that infections are the commonest cause of heart disease and that the diagnosis may depend solely on changes in the electrocardiogram.

The best feature of the book is its thorough discussion of auscultation and its correlation, in diagrams, of heart sounds and murmurs with the other phenomena of the cardiac cycle. The New York Heart Association's Nomenclature and Criteria is used, but it is to be regretted that the changes in the latest edition (1953) have not been incorporated. The section on congenital heart disease is excellent. This book is recommended as an excellent introduction to the auscultation of the heart but not as a text on cardiology.—*Col. R. P. Johnson, MC, USA*

SHOCK AND CIRCULATOR HOMEOSTASIS, Transactions of the Second Conference, October 19, 20, and 21, 1952, edited by *Harold D. Green,* M. D. 275 pages; illustrated. Josiah Macy, Jr. Foundation, New York, N. Y., 1953. Price $3.75.

This publication presents the point of view of researchers, each of whom is an authority in the metabolic aspects of hemorrhagic and traumatic shock and in the distribution and possible physiologic function of epinephrine and nor-epinephrine.

Animal experimentation is utilized in the search for the causes of irreversibility of the shock state to determine which is "cause" and which is "effect." Two factors of recent prominence assume dominate proportions in relation to the progressive shock states; *i. e.*, the role of clostridial infection in the liver subsequent to hypotensive states, and the production of vaso excitor material and vaso depressor materials. No factual decision or conclusions are expressed, but the arguments put forth are provocative of further investigation. One significant element to be borne in mind is that all of the investigations have been carried out in the laboratory animal, and their application to the human being subjected to equivalent hypotensive states is still to be proved. The nature of the publication makes it difficult reading, but it is a work of distinct interest to the researcher in this important field of medicine. For a book of its type it is well presented, the graphs and tables are plentiful and clearly illustrate particular points. The bibliography is extensive and the index is adequate in the field of experimental shock.

—*Capt. E. H. Dickinson, MC, USN*

ANATOMY AND SURGERY OF HERNIA, by *Leo M. Zimmerman,* M. D., and *Barry J. Anson,* Ph. D. (Med. Sc.) 374 pages; illustrated. The Williams & Wilkins Co., Baltimore, Md., 1953. Price $10.

In this book a surgeon and an anatomist have collaborated to develop adequately their belief that "the treatment of hernia is early surgical repair," and that "no operation in surgery more rigidly demands the exercise of the utmost surgical finesse and technic than does the repair of hernia."

This monograph presents all the types of hernias in the abdominal cavity, including diaphragmatic, internal, and pelvic forms, and is complete in every aspect. It begins with the development of the history of the subject, followed by a general discussion of the etiologic, physiologic, and pathologic factors. The anatomic and embryologic presentation is particularly well done, and is profusely illustrated with detailed drawings of the normal and abnormal anatomy. Accompanied by serial diagrams, the clinical aspects and the pathologic anatomy of each type of hernia is presented separately with a step-by-step description of

the surgical treatment. The book is concluded with a chapter on the medicolegal aspects of inguinal hernia.

In general, the style of writing is pleasing to the reader, being neither tiring nor confusing, and the chapter bibliographies are complete. This publication will serve as an excellent reference text for medical students. It should be read, from cover to cover, by all surgical residents and by all physicians engaged in the treatment of hernias.—*Lt. Comdr. R. M. Campbell, MC, USN*

Subacute Bacterial Endocarditis

We have come a long way on the path to victory or in the war against bacterial endocarditis, but now is the time to consolidate our gains, to assess the present position, and to plan for the future, because there is still much to be accomplished.

What have we gained? We have prolonged the life expectancy of patients with rheumatic heart disease and with congenital heart disease in whom subacute bacterial endocarditis has developed. Moreover, many who have recovered have remained well and are able to be active at least over a period of years. To assure complete victory, we must achieve, first, the prevention of rheumatic heart disease, the complete prevention of hemolytic streptococcus infection. Next, we must prevent congenital heart disease. This is a task for geneticists and teratologists that needs the attention of all university medical scientists. Third, we must prevent infection, especially oral sepsis and other local infections that commonly invade the circulation and localize on the heart valves when the local defense mechanism is ruptured or penetrated. This objective may be reached by further study of problems of infection.

I believe that these goals can be reached only through the pursuit and accumulation of scientific knowledge through the ideals of experimental medicine and therapeutics, namely, the advancement and transmission of knowledge. Through experimental medicine and therapeutics, advances will continue on a broad front.

—CHESTER S. KEEFER, M. D.
in *Journal of the American Medical Association,* p. 1399, Aug. 8, 1953

NEW BOOKS

Books received by the *U. S. Armed Forces Medical Journal* are acknowledged in this department. Those of greatest interest will be selected for review in a later issue.

THE BOOK OF HEALTH, A Medical Encyclopedia for Everyone, compiled and edited by *Randolph Lee Clark, Jr.*, B. S., M. D., M. Sc. (Surgery), Houston, Tex., Director and Surgeon-in-Chief, The University of Texas, M. D. Anderson Hospital for Cancer Research; Professor of Surgery, The University of Texas, Post-Graduate School of Medicine; Fellow of the American College of Surgeons; National Consultant in Surgery, United States Air Force; and *Russell W. Cumley*, B. A., M. A., Ph. D., Houston, Tex., Director of Publications, The University of Texas, M. D. Anderson Hospital for Cancer Research; Professor of Medical Journalism, The University of Texas, Post-Graduate School of Medicine. 1st edition. 836 pages; 1,400 illustrations. Elsevier Press, Inc., Houston, Tex., 1953. Price $10.

TRIUMPH OF LOVE, An Unforgettable Story of the Power of Goodness, by *Leona S. Bruckner.* 213 pages. Simon and Schuster, Inc., New York, N. Y., 1954. Price $3.

YOU AND YOUR SKIN, by *Norman R. Goldsmith*, M. D., Dermatologist, St. Joseph's Hospital, Lancaster, Pa.; Diplomate American Board of Dermatology and Syphilology; Formerly Bacteriologist, Pittsburgh Skin and Cancer Foundation; Formerly A. A. Surgeon Dermatoses Investigations Section, U. S. Public Health Service. 168 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $3.75.

THE CHEST, A Handbook of Roentgen Diagnosis, by *Leo G. Rigler*, M. D., Professor and Chief, Department of Radiology, University of Minnesota. 2d edition. 380 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1954. Price $8.

THE PATHOLOGY OF TRAUMA, by *Alan Richards Moritz*, M. D., Professor of Pathology and Director of the Institute of Pathology of the School of Medicine of Western Reserve University, Cleveland, Ohio. 2d edition, enlarged and thoroughly revised. 414 pages; 126 illustrations. Lea & Febiger, Philadelphia, Pa., 1954. Price $8.50.

SURGICAL PATHOLOGY, by *Peter A. Herbut*, M. D., Professor of Pathology, Jefferson Medical College and Director of Clinical Laboratories, Jefferson Medical College Hospital, Philadelphia, Pa. 2d edition, thoroughly revised. 893 pages; 528 illustrations. Lea & Febiger, Philadelphia, Pa., 1954. Price $14.

THE REHABILITATION OF INDUSTRIAL HAND AND ARM DISABILITIES, A Series of Papers Presented at The Second Annual Conference and Demonstration for Compensation Insurers and Physicians. Sponsored by The Institute for the Crippled and Disabled, New York, N. Y., April 28, 1953. 48 pages; illustrated. Price $1.

GLOBAL EPIDEMIOLOGY, A Geography of Disease and Sanitation, Volume III, The Near and Middle East, by *James Stevens Simmons,* B. S., M. D., Ph. D., Dr. P. H., Sc. D. (Hon.), Brigadier General, United States Army, Retired; Dean and Professor of Public Health, Harvard University School of Public Health; *Tom F. Whayne,* A. B., M. D., M. P. H., Dr. P. H., Colonel, MC, USA; Chief, Preventive Medicine Division, Office of The Surgeon General, United States Army; *Gaylord W. Anderson,* A. B., M. D., Dr. P. H., Mayo Professor and Director, School of Public Health, University of Minnesota; *Harold Maclachlan Horack,* B. S., M. D., Member of Staff, Department of Medicine and Section of Cardiology, Ochsner Clinic, New Orleans; Instructor in Medicine, Tulane University School of Medicine. Associate author, *Ruth Alida Thomas,* B. A., A. M., M. P. H., Research Associate, School of Public Health, University of Minnesota; Instructor, Department of Tropical Public Health, Harvard University School of Public Health; and collaborators. 357 pages; illustrated. J. B. Lippincott Co., Philadelphia, Pa., 1954. Price $12.

DISORDERS OF THE BLOOD, Diagnosis: Pathology: Treatment: Technique: by *Sir Lionel E. H. Whitby,* C. V. O., M. C., M. A., M. D. (Cantab.), F. R. C. P. (Lond.), D. P. H., Regius Professor of Physic in the University of Cambridge; Honorary Physician to the United Cambridge Hospitals; Honorary Consulting Hematologist to the Army, Ministry of Pensions and Ministry of Supply; Emeritus Lecturer in Bacteriology to the Middlesex Hospital; Late Consulting Physician in Blood Transfusion and Resuscitation to the Army; and *C. J. C. Britton,* M. D. (New Zealand), D. P. H., Physician and Hematologist to the Prince of Wales's Hospital, London; Consulting Hematologist to Queen Mary's Hospital, Roehampton; Pathologist to St. Andrew's Hospital, Dollis Hill, The Finchley Memorial Hospital and the Hendon District Hospital; Late Assistant Pathologist, Christchurch Hospital, New Zealand, and the Bland Sutton Institute of Pathology, The Middlesex Hospital, London. 7th edition. 856 pages; 20 plates and 106 text-figures. Grune & Stratton, Inc., New York, N. Y., 1953. Price $9.50.

PHARMACOLOGY AND THERAPEUTICS, A Textbook for Students and Practitioners of Medicine, by *Arthur Grollman,* Ph. D., M. D., F. A. C. P., Lecturer in Pharmacology and Toxicology, Medical Branch, and Professor and Chairman of the Department of Experimental Medicine, Southwestern Medical School, University of Texas; Attending Physician, Parkland Hospital; Consultant in Internal Medicine, Baylor University Hospital; Consultant, Veterans Administration Hospital, Dallas, Tex. 2d edition, revised and enlarged. 866 pages; 127 illustrations. Lea & Febiger, Philadelphia, Pa., 1954. Price $10.

THE CHILD, HIS PARENTS AND THE NURSE, by *Florence G. Blake,* R. N., M. A., Associate Professor of Nursing Education, (Nursing Care of Children) University of Chicago. Foreword by *Adrian H. VanderVeer,* M. D., Formerly Associate Professor of Pediatric Psychiatry, University of Chicago. 440 pages. J. B. Lippincott Co., Philadelphia, Pa., 1954. Price $5.

DIABETIC CARE IN PICTURES, Simplified Statements with Illustrations Prepared for the Use of the Patient, by *Helen Rosenthal,* B. S., Former Chief, Frances Stern Food Clinic, The Boston Dispensary; Former Assistant in Medicine, Tufts College Medical School; and *Joseph Rosenthal,* M. D., Physician-in-Charge, Diabetes Clinic, The Boston Dispensary; Assistant Professor of Medicine, Tufts College Medical School; Associate Staff, Joseph H. Pratt Diagnostic Hospital. (All Units of the New England Medical Center.) 2d edition. 164 pages; 128 original illustrations (including 7 in color). J. B. Lippincott Co., Philadelphia, Pa., 1953.

SEXUAL BEHAVIOR IN THE HUMAN FEMALE, by the *Staff of the Institute for Sex Research, Indiana University: Alfred C. Kinsey, Wardell B. Pomeroy, Clyde E. Martin,* and *Paul H. Gebhard.* 842 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., 1953. Price $8.

DISEASES OF THE RETINA, by *Herman Elwyn,* M. D., Senior Assistant Surgeon, New York Eye and Ear Infirmary. 2d edition, revised and augmented. 713 pages; with 243 illustrations of which 20 are in color. The Blakiston Co., Inc., New York, N. Y., 1953. Price $12.

PICTORIAL INTRODUCTION TO NEUROLOGICAL SURGERY, by *G. F. Rowbotham* and *D. P. Hammersley.* 108 pages; illustrated. The Williams & Wilkins Co., Baltimore, Md., 1953. Price $4.50.

PHYSIOLOGICAL METHODS IN CLINICAL PRACTICE, by *William S. Middleton,* M. D., Department of Medicine, University of Wisconsin Medical School, Madison, Wis. American Lecture Series, Publication Number 216, A Monograph in American Lectures in Medicine. 40 pages. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $1.

UNITED STATES ARMY IN WORLD WAR II, The European Theater of Operations, Logistical Support of The Armies. Volume I: May 1941-September 1944, by *Roland G. Ruppenthal. Office of the Chief of Military History, Department of the Army,* Washington, D. C. 616 pages; illustrated. U. S. Government Printing Office, Washington, D. C., 1953. Price $4.50.

CLINICAL ROENTGENOLOGY, Volume I, Developmental and Systemic Conditions and Local Lesions in the Extremities, by *Alfred A. de Lorimier,* M. D., Radiologist, Saint Francis Memorial Hospital, San Francisco, Calif.; Consultant in Radiology for the United States Army, at the Letterman Army Hospital; Consultant in Radiation Therapy for the United States Public Health Service at the U. S. Marine Hospital, San Francisco, Calif.; Formerly, Commandant, The Army School of Roentgenology; *Henry G. Moehring,* M. D., Radiologist, Duluth Clinic, Duluth, Minn.; Formerly, Director, The Army School of Roentgenology; and *John R. Hannan,* M. D., Radiologist, Cleveland, Ohio; Radiologist, Lake County Memorial Hospital, Painesville, Ohio; Formerly, Director, The Army School of Roentgenology; Associate Professor, Diagnostic Roentgenology, the Frank E. Bunts Educational Institute, Cleveland Clinic Foundation; Staff, Department of Roentgenology, Cleveland Clinic Foundation. 495 pages; 782 illustrations. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $18.50.

ADMINISTRATIVE MEDICINE, Transactions of the First Conference, March 9, 10, and 11, 1953, New York, N. Y., edited by *George S. Stevenson,* M. D., Medical Director, National Association for Mental Health, New York, N. Y. 176 pages; illustrated. Sponsored by the *Josiah Macy, Jr. Foundation,* New York, N. Y. Printed by Foundation Press, Inc., Packanack Lake, N. J. Price $3.

CONNECTIVE TISSUES, Transactions of the Fourth Conference, February 18, 19, and 20, 1953, Princeton, N. J., edited by *Charles Ragan,* M. D., Associate Professor of Medicine, Columbia University, College of Physicians and Surgeons, New York, N. Y. 197 pages; illustrated. Sponsored by the *Josiah Macy, Jr. Foundation,* New York, N. Y. Printed by Corlies, Macy & Company, Inc., New York, N. Y. Price $3.75.

ACUTE PULMONARY EDEMA, Modern Medical Monographs No. 10, by *Mark D. Altschule,* M. D., Assistant Professor of Medicine, Harvard Medical School, and Visiting Physician, Beth Israel Hospital, Boston; Director of Internal Medicine and of Research in Clinical Physiology, McLean Hospital, Waverley, Mass. 68 pages. Grune & Stratton, Inc., New York, N. Y., 1954. Price $3.50.

PATHOLOGY, by *W. A. D. Anderson,* M. A., M. D., F. A. C. P., Professor of Pathology and Chairman of the Department of Pathology, University of Miami School of Medicine; Director of the Pathology Laboratories, Jackson Memorial Hospital, Miami, Fla.; Formerly Professor of Pathology, Marquette University School of Medicine, Milwaukee, Wis. 1,393 pages; with 1,241 illustrations and 10 color plates. 2d edition. The C. V. Mosby Co., St. Louis, Mo., 1953. Price $16.

AN ATLAS OF PELVIC OPERATIONS, by *Langdon Parsons,* M. D., Professor of Gynecology, Boston University School of Medicine; Chief, Department of Gynecology, Massachusetts Memorial Hospital; Gynecologist, Palmer Memorial Hospital; Gynecologist, Massachusetts Department of Public Health, Hospital for Cancer at Pondville, Massachusetts; and *Howard Ulfelder,* M. D., Assistant Clinical Professor of Gynecology, Harvard Medical School; Assistant Surgeon, Massachusetts General Hospital; Gynecologist, Massachusetts Department of Public Health, Hospital for Cancer at Pondville, Mass. Illustrated by *Mildred B. Codding,* A. B., M. A., Surgical Artist, Department of Surgery, Harvard Medical School and Peter Bent Brigham Hospital, Boston, Mass. 231 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., 1953.

THE SIZE AND GROWTH OF TISSUE CELLS, by *Joseph G. Hoffman,* Ph. D., Director of Cancer Research, Roswell Park Memorial Institute; Research Professor of Biophysics, School of Medicine, University of Buffalo; Consultant, Los Alamos Scientific Laboratory, University of California, Los Alamos, New M. American Lecture .Series, Publication Number 172, A Monograph in American Lectures in Medical Physics, edited by *Otto Glasser,* Ph. D., Department of Biophysics, Cleveland Clinic Foundation, Cleveland, Ohio. 128 pages; 13 illustrations. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $4.

THE ADAPTIVE CHIN, by *E. Lloyd DuBrul,* M. S., D. D. S., Assistant Professor in Charge of Oral Anatomy, College of Dentistry, University of Illinois, Chicago, Ill.; and *Harry Sicher,* M. D., D. Sc., Professor of Anatomy and Head of Department, Loyola University School of Dentistry, and Guest Lecturer, Northwestern University Dental School, Chicago, Ill. American Lecture Series, Publication Number 180, A Monograph in American Lectures in Anatomy, edited by *Otto F. Kampmeier,* Ph. D., M. D., Professor of Medical History, Formerly, Professor of Anatomy and Head of Department, 1928-1951, University of Illinois, College of Medicine, Chicago, Ill. 97 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1954. Price $3.50.

DIAGNOSIS AND LOCALIZATION OF BRAIN TUMORS, A Clinical and Experimental Study Employing Fluorescent and Radioactive Tracer Methods, by *George E. Moore,* M. D., Ph. D., Markle Scholar in Medical Science; Director, Roswell Park Memorial Institute; Associate Professor, Department of Surgery, Buffalo University School of Medicine; Formerly, Associate Professor, Department of Surgery, the Medical School, University of Minnesota. 241 pages; 87 illustrations. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $10.50.

PHYSIOLOGY, by *Rolland J. Main,* Ph. D., formerly Professor of Physiology, Medical College of Virginia, Richmond, Va.; revised by *Alfred W. Richardson,* Ph. D., Assistant Professor of Physiology, Indiana University School of Medicine, Bloomington, Ind. 2d edition. 474 pages; illustrated. The C. V. Mosby Co., St. Louis, Mo., 1953. Price $7.

SCIENCE AND MAN'S BEHAVIOR, The Contribution of Phylobiology, Including the Complete Text of The Neurosis of Man, by *Trigant Burrow,* M. D., Ph. D., edited by *William E. Galt,* Ph. D. 564 pages. Philosophical Library, Inc., New York, N. Y., 1953. Price $6.

AGGRESSION, HOSTILITY AND ANXIETY IN CHILDREN, by *Lauretta Bender*, M. D., Professor of Clinical Psychiatry, New York University College of Medicine; Associate Attending Psychiatrist, New York University-Bellevue Medical Center; Senior Psychiatrist in charge of Children's Service of the Psychiatric Division, Bellevue Hospital, New York, N. Y. 182 pages; 23 illustrations. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $5.50.

THE NURSE IN THE PUBLIC HEALTH PROGRAM, by *Pearl Parvin Coulter*, R. N., M. S., Director and Professor of Public Health Nursing, University of Colorado School of Nursing. 309 pages. G. P. Putnam's Sons, New York, N. Y., 1954. Price $4.75.

DOCTOR—IT TICKLES!, by *Henry Gregor Felsen*. 120 pages; illustrated. Prentice-Hall, Inc., New York, N. Y., 1953. Price $2.95.

THE PRACTICAL MANAGEMENT OF DIABETES, by *Edward Tolstoi*, M. D., Associate Professor of Clinical Medicine, Cornell University Medical College; Attending Physician and Chief, Diabetic Hospital, The New York Hospital; Consulting Physician, New York Infirmary for Women and Children; Consulting Physician, The Norwalk Hospital, Norwalk, Conn. American Lecture Series, Publication Number 199, A Monograph in American Lectures in Metabolism, edited by *Paul Gyorgy*, M. D., Department of Pediatrics, University of Pennsylvania School of Medicine, Philadelphia, Pa.; *Louis Leiter*, M. D., Division of Medicine, Montefiore Hospital, New York, N. Y.; and *S. O. Waife*, M. D., The Lilly Research Laboratories, Indianapolis, Ind. 93 pages. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $3.25.

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